TECHNOLOGY DEPARTMENT

TELEPHONE ENGINEER and MANAGEMENT

TECHNOLOGY DEPARTMENT

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Every month, more and more independent telephone companies across the nation are adopting our Complete Directory Service Plan.

There are many good reasons.

It will pay your company to investigate.

GENERAL TELEPHONE DIRECTORY COMPANY

Telephone collect or write to one of the offices listed below for a representative to contact you.

EASTERN OFFICES

185 North Wabash Avenue, Chicago 1, Illinois - Telephone — STate 2-5478
G. Daniel Baldwin Building, Erie, Pennsylvania - Telephone 2-4187
420 Columbia Street, LaFayette, Indiana - Telephone 4854
Washington Building, Madison, Wisconsin - Telephone — Fairchild 6026

WESTERN OFFICES

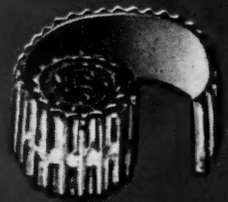
604 Pine Avenue, Long Beach 12, California - Telephone 6-7221
1220½ Texas Avenue, Lubbock, Texas - Telephone 2-6330
Peyton Building, Spokane, Washington - Telephone — Main 8644

NATION-WIDE PUBLISHERS OF TELEPHONE DIRECTORIES

Tech.

EXIDE-MANCHEX PLATES *are DIFFERENT*

EXCLUSIVE Positive Plate showing lead button construction—rolled strips of corrugated lead, which are pressed securely into holes of the lead antimony grid.

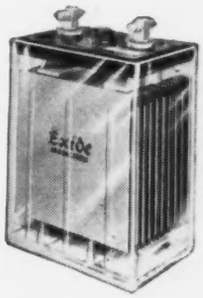


Only a small portion of the total lead in buttons is formed initially into active material; the remainder is available for gradual conversion in service.

The famous and exclusive positive plate is the result of 62 years of battery-building experience. During that time we have learned much about the design and construction of every type of battery for every application. Development work never ceases in improving the performance of Exide Batteries. Our research staff is the largest in the industry. Engineers, chemists, metallurgists, physicists, technicians and their aides, equipped with all the necessary tools and devices, are constantly building and testing various types and kinds of plates and assemblies.

We have yet to find a positive plate with all the desirable characteristics of the Exide-Manchex for use in telephone service. Further proof of its superiority is supplied by long service records in thousands of installations.

Use Exide-Manchex Batteries for all stationary battery requirements—common battery, emergency reserve, signaling, PBX and other applications. Their use is assurance of dependability, long life and low cost maintenance.



THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

1888—DEPENDABLE BATTERIES FOR 62 YEARS—1950

"Exide-Manchex" *Reg. Trade-mark U. S. Pat. Off.*

Across The Editor's Desk

Those of you wishing to mix business with pleasure have an opportunity to visit Old Mexico immediately on adjournment of the Texas Telephone Association's annual convention March 8 at San Antonio. Secretary J. B. Haley has announced plans of the Mexican trip on private American Airline planes and details will be sent to anyone interested in joining the group of telephone people if you will address Mr. Haley at Austin, Texas.

• • •

Our thanks to the Greenwood (S. Car.) Telephone Co. for our copy of the Golden Anniversary issue of the Anderson Daily Mail. The copy was the largest newspaper ever published in South Carolina comprising 304 pages. The Greenwood Telephone Company received much prominent mention in this issue and mailed a number of souvenir copies.

• • •

Congratulations to HUGH A. BARNHART, Rochester, Ind., on the 25th Anniversary of the Rochester News Sentinel celebrated during December. Hugh is known to the telephone fraternity because of his interest in the Rochester Telephone Company as well as his title of co-publisher of the News Sentinel. The issue commemorating the occasion carried a history of the newspaper and its accomplishments during the past 25 years.

• • •

And, speaking of Anniversaries, we celebrated our completion of 40 years serving the telephone with the publication of our January 1949 issue and are now starting our 42nd year with this January issue. The magazine TELEPHONE ENGINEER was started January 1, 1909 and has never missed an issue since its inception.

• • •

President J. I. KENNEDY of the Independent Telephone Pioneer Association has completed appointments of all committes of that organization and we predict a banner year under his leadership. The president is head of the Northwest Telephone Company, Freeport, Ill. and is 50 year veteran of the telephone industry.

The National Telephone Magazine

TELEPHONE ENGINEER and MANAGEMENT

JANUARY, 1950 VOL. 54, NUMBER 1

Editor, RAY W. SMITH • *Advertising Director*, ROY F. SMITH
Managing Editor, JOHN G. REYNOLDS • *Promotion Manager*, DON C. SORENSEN
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FRONT COVER: View from front door of Portsmouth, Va. business office of the Chesapeake & Potomac Tel. Co. of Va.

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Simple Arithmetic Proves

You Can't Beat Creosote Oil* as a Preservative

***Especially U·S·S CREOSOTE OIL**

Divide the total initial cost of a pole treated with creosote oil by the years of service life you can expect. Then apply the same formula to an untreated pole, or to a pole treated with a less-permanent preservative.

Your figures will prove that the annual charge for creosoted poles is much *less* . . . the many extra years of service far offset the cost of creosote oil treatment. Translate these figures into practice and you'll trim your annual pole replacement costs sharply for years to come.

But, for best results and lowest costs, be sure that U·S·S Creosote Oil is used. Its uniform quality, the result of *continuous* processing, makes it possible for you to obtain the same high performance, application after application.

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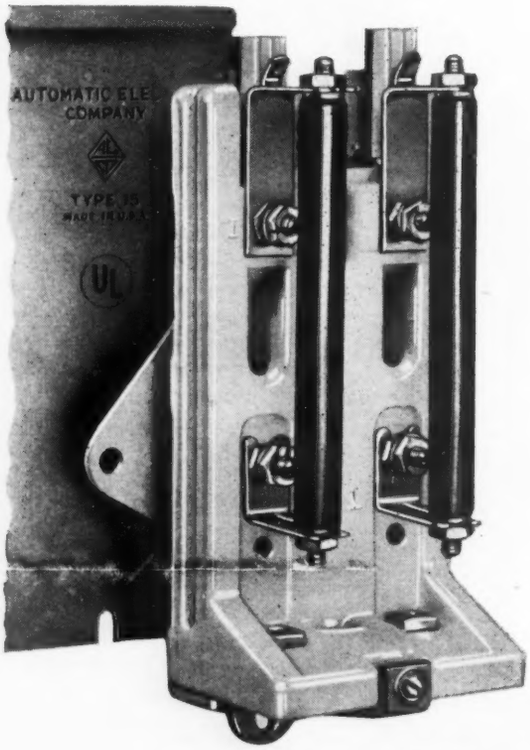
TYPE 15 SUBSTATION PROTECTORS

Mount Easier Last Longer Cost Less

It's easy to understand the increased demand for Automatic Electric Type 15 Substation Protectors. More companies are using Type 15 because it's easier to install, easier to wire, easier to maintain and easier on the supply budget. You can stock less of the Type 15, because it can be used inside without cover, or outside with cover. Finally, the discharge block used with the Type 15 eliminates resetting expense after discharge. Ask for full details about this and other Automatic Electric protective devices.



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Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

"Way Back When—"

IN PREVIOUS ISSUES we have published some of the interesting details that pioneer telephone men and women harbor in their memories. Those recollections have served to remind others of interesting facts of the past and we have received many items for use in our new department. For example do you remember *Way Back When*—

THE FIRST TELEPHONE plant in Oklahoma was built by Cherokee Indians under permission obtained with much difficulty from the Cherokee Tribal Legislature. This was in 1886, 10 years after Alexander Graham Bell had constructed his first successful telephone instrument. This pioneer telephone line ran from Tahlequah, the Cherokee capital, to Muskogee, and was looked upon as something supernatural by many of the Cherokees. The original promoters of this toll line were J. S. Stapler, Henry Eiffert, D. W. Lipe and L. B. Bell, all of Tahlequah, and most of whom are dead. The work of actual construction was directed by E. D. Hicks of Tahlequah.

An Idea Is Born in 1885

IN THE EARLY 80's, the Indian territory was a vast wilderness. There were few towns, and communication with the outside world was slow and difficult. In 1885 a few progressive business men at Tahlequah saw the necessity of being in touch with civilization by some means other than walking or going on horseback or in wagons. Muskogee was the nearest telegraph station, and at first a telegraph line to Muskogee was planned. Telegraph operators, however, were scarce and high-priced in the Indian country, and material for line building was expensive. The plan for quicker communication had been almost abandoned when news of the success of the telephone found its way to Tahlequah.

The telephone of that day was as unlike the telephone of this day as a native of Uganda is unlike a Parisian aristocrat. Five telephones were ordered, at $75 each, or $375

for all; 12 cents a pound was paid for iron wire and seven cents for each insulator. Wet batteries were used, and their price was high.

No sooner did the Tahlequah promoters begin moving than they stirred up trouble for themselves. The Cherokee legislature was controlled by non-progressive full-blood Indians, who were violently opposed to anything that looked like the enroachment of white men and the ways of white men. They argued that when a wire was stretched railroads, which they feared and hated, would follow; furthermore, they "*did not believe a wire could talk, anyway.*"

A couple of vibrators were used to explain to these Cherokees how the telephone was operated. The vibrators were handled by three full-blood Indians—Soggy Sanders (Sargeyas), Tom Smith (Talaki), and Daniel Gritts (Westuxula)—before the assembled legislators, who grew excited and crowded around to see the wire "talk," not only in English, but in Cherokee. The chief of the Cherokees at that time was D. W. Bushyhead (Tsunuluske), a man of liberal mind. After prolonged debate a bill was passed by the Cherokee council allowing the company to build a line from Tahlequah to the west boundary of the Cherokee nation.

Construction was soon under way. Native oak poles were cut and peeled and the butts charred.

(*Please turn to page 8*)

The Better | We Live

"THE BETTER we produce, the better we live." That simple truth is the slogan of the 1950 Advertising Council campaign, dedicated to publicizing the greatness of our economic system. It is a continuation of the 1949 series entitled, "The Miracle of America."

The Ad Council, a nonprofit grouping of advertising agencies, media and local advertisers in the public interest, is splashing the colorful American story on newspaper and magazine pages, on car cards, outdoor posters, plant bulletin boards and radio.

The story is replete with prideful facts . . .

Within a century we have increased our power output 29-fold.

Whirring machines have supplanted straining animals and sweating men.

We have learned the secret of mass production. Ordinary pins once sold for 20 cents apiece, produced by hand. A New Englander then invented a machine which would turn out 2,000,000 pins a week. What is true of pins is true of thousands of other products of our modern industrial civilization.

We have developed new skills on our jobs.

Our handworkers now achieve much more in eight hours than their grandparents did in their twelve- to 16-hour work days.

Our machines have made jobs. Over bitter opposition 1,000,000 jobs in the horse and buggy business were liquidated. But in the process 6,380,000 *new* jobs sprang into being . . . in the auto industry.

Comparisons of American living standards with those of other nations are hackneyed. No need to compare the 8.4 pounds of beef which a week's wages would purchase in Russia with the 81.8 pounds they would buy in the United States, et familiarly cetera.

But comparisons with our own past output are just as revealing. In 1914 it took an average factory worker nine hours' wages to pay for a pair of men's work shoes. Now it takes him 3½ hours. Thirty-five years ago an electric light bulb cost 102 minutes' toil. Now it costs seven minutes. For an electric fan the periods are 49 hours and four hours respectively. That, sirs, is progress. And it's still on the march.

In the circumstances you'd think the enemies of our capitalist competitive economic system would have the grace and the sense to sing mighty small. But they don't. The welfare staters, the Commie fronters, the businessman-haters are in full cry—and making headway. Apparently nothing succeeds like failure.

For its rousing campaign of rebuttal—for its defense of the way of life which made America the greatest nation in history—the Ad Council deserves one red-white-and-blue orchid.—(CHICAGO JOURNAL OF COMMERCE.)

DISTRIBUTED BY KELLOGG SWITCHBOARD AND SUPPLY COMPANY
DROP • ENDURPRENE • BRIDLE
MANUFACTURED BY GENERAL INSULATED WIRE WORKS, INC., PROVIDENCE, R.I.

The man on the pole will tell you- KLEINS

Since 1857

If you know linemen, you know they want the finest in quality when it comes to equipment. Not only does their job depend on it—many times their lives do.

It is the reputation of nearly a century in designing and manufacturing the finest in linemen's equipment that has won Klein its position of preference with linemen and electricians everywhere.

It is easy to make equipment that looks like Kleins. It takes years of experience plus extensive manufacturing facilities to make equipment that performs like Kleins.

Today you are assured prompt delivery on all Klein products. Be sure your pliers, climber straps, safety belts and other items carry the Klein trade-mark—famous for quality "since 1857."

ASK YOUR SUPPLIER
Foreign Distributor:
International Standard Electric Corp., New York

The Klein Pocket Tool Guide showing the Klein line and containing useful tool information will be mailed on request.

Mathias KLEIN & Sons
Established 1857 **Chicago, Ill., U.S.A.**
3200 BELMONT AVENUE CHICAGO 18 ILLINOIS

In the 20 miles from Tahlequah to Fort Gibson only about three full miles of poles were needed, trees being used for the remainder of the distance. The workmen carried small ladders for climbing, linemen's climbers being an unknown device in that wild and woolly country.

Equipped with a camp outfit, the gang started without thought of a survey of the most feasible route. Men familiar with the country were employed to locate the most difficult —not the easiest—route, the purpose being to offer no encouragement to the building of a railroad. This precaution was due to a stipulation in the act of the Cherokee council. If the guides, after building a mile or two, found that the direction was wrong, a jog was made to get back into line. If a house was passed where the occupants were superstitious or otherwise afraid, the line was built around it and far enough away to allay their fears.

By the fall of 1886 the line had been carried to Fort Gibson, and the telephones received. Installations were made, and everything declared ready for the official "test" when—not a sound could be enticed from the instrument. A soldier in the garrison at Fort Gibson fortunately had seen telephones used in Eastern States and volunteered his help.

When the Fort Gibson end finally was put in what the soldier said was working order, a message was dispatched post haste to Tahlequah with detailed instructions how to put that end in working order. In several hours a ring was received at Fort Gibson, the first ring of a telephone bell in actual operation ever heard in Oklahoma, and the conversation that followed not only marked an epoch in the advancement of the Cherokees, but astonished beyond expression the full-bloods that were present.

Shortly afterwards the line was built into Muskogee. The crossing of the Arkansas river at first seemed insurmountable. The wire would break if pulled too tight or be broken by driftwood if left too slack. The span was more than 1,200 feet. A copper wire, No. 6, was bought at a cost of $105 and used in lieu of the weaker iron wire. Hard drawn copper wire was unknown at that time, and there was never a pair of suspenders that had more stretch to them than did that famous No. 6. It finally went into the river, and probably still lies somewhere in its sands. A No. 12 iron wire was hung in its place, and gave good service for several years.—THE END.

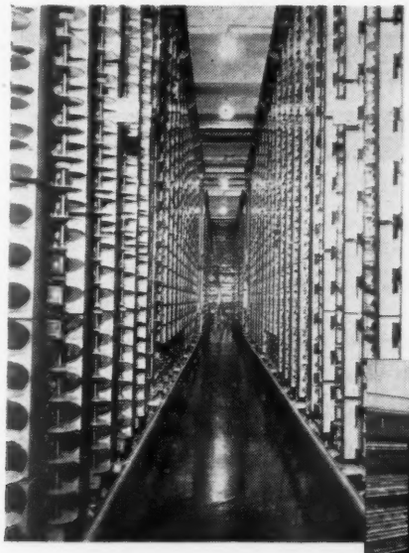
LEXINGTON

Converts to FEDERAL 7A-2 ROTARY

Cuts over from manual to 15,400 lines and 22,400 terminals of FEDERAL Dial Switching Equipment.

At the cutover: (left to right)—General William H. Harrison, President, International Telephone and Telegraph Corp. and Chairman of the Board, Federal Telephone and Radio Corp.; Harold V. Bozell, President, General Telephone Corp.; L. F. Shepherd, President, Lexington Telephone Co.; Morris F. La Croix, Chairman of the Board, General Telephone Corp.; A. E. Oram, President, Lexington Chamber of Commerce.

Another subsidiary of General Telephone Corporation provides the advanced facilities and improved efficiency of ROTARY DIAL SWITCHING for its subscribers.



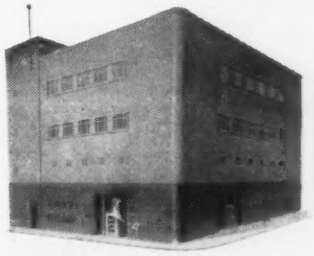
Rows of finder and selector switches and line of toll boards in the new Lexington exchange.

ANOTHER great program of modernization in the independent industry came to its fulfillment in Lexington, Ky., on December 11, 1949, when the Lexington Telephone Company cut over its entire Lexington plant network from manual to Federal 7A-2 Rotary Dial operation.

This is the second subsidiary of General Telephone Corporation, and Lexington is the third leading city in the U. S., to bring its subscribers the inherent advantages and specially engineered facilities of Rotary Switching.

Housed in a specially-designed, newly completed building of four stories, Lexington's new system is one of the finest, most up-to-date, most efficient automatic telephone installations in the world.

Two other cities—Tallahassee, Fla., and LaCrosse, Wis.—will soon be likewise converted to Federal Rotary.



New telephone building of the Lexington Telephone Company.

FEDERAL TELECOMMUNICATION LABORATORIES, Nutley, N. J. . . . a unit of I T & T's world-wide research and engineering organization.

Federal offers attractive delivery dates on its complete line of automatic switching equipment—both Rotary and Step-by-Step—for any size exchange. For details, write to Telephone Sales Department.

Federal Telephone and Radio Corporation

100 KINGSLAND ROAD, CLIFTON, NEW JERSEY

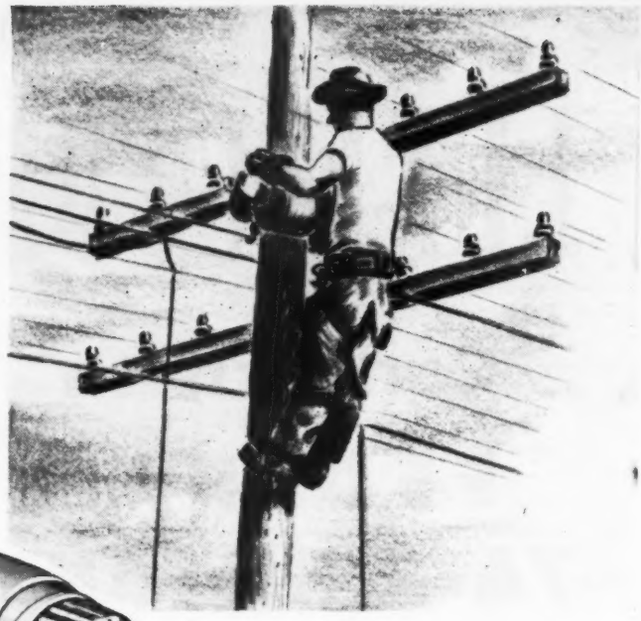
In Canada: Federal Electric Manufacturing Company, Ltd., Montreal, P. Q.

Export Distributors: International Standard Electric Corp., 67 Broad St., N.Y.

FEDERAL TELEPHONE & RADIO — FTR — An IT&T Associate

AERIAL OR UNDERGROUND

GET PROMPT DELIVERIES



of Paper Lead Telephone Cable *by General Cable*

---Any Size

---Any Quantity

---Any Place

When you buy General Cable products for aerial or underground construction from Automatic Electric, you are assured of highest quality at the lowest possible cost.

General Cable lead covered telephone cable is now available for prompt delivery from your Automatic Electric supplier in all sizes and any quantity. Now is the time to order complete cable stocks for repairs and new construction in preparation for approaching winter traffic conditions.

General Cable is the answer to all your traffic problems, either aerial or underground.

TAPE ARMORED "PARKWAY" CABLES

For direct installation in the earth, these cables have the same general construction as ordinary lead cables with the addition of a steel armoring and jute roving over the sheath to protect it from mechanical injuries and destructive soil conditions. Available on order in a variety of sizes.

JUTE COVERED CABLES

Where there is no danger of mechanical injury, lead encased cables with jute covering but without steel tape armoring are often installed directly into the earth. Specifications together with reel lengths and weights will be furnished on request.

MANUFACTURED FOR

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*

ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH

NEWSLETTERS *on Alternate Weeks*

January 1, 1950

Dear Sir:

REA has released forms for applying for telephone loans. Recent booklet (PA-83) released by REA stressed several points: (1) emphasis is given to need for "sufficient revenue from borrower's system, in excess of operating expenditures (including maintenance & replacement) to repay loan"; (2) REA recognizes there are "financial hazards" attached to making of telephone loans arising out of possibility of subscribers giving up service when economic conditions are unfavorable"; (3) because of these & other hazards REA "will ask that each borrower provide an equity to supplement the amount of the loan," amount of equity to depend upon appraisal of security factors involved in each case; (4) "normally first mortgage will be required on borrower's entire system," with suitable provisions requiring "adherence to approved construction standards, maintenance of adequate accounts, periodic audits & rate schedules that will provide sufficient revenues to cover all operating expenses & payments of principal & interest on loan"; (5) it will be responsibility of applicant to obtain from appropriate State authority required certificates of convenience & necessity, franchises, approval to borrow & approval of rate schedules.

All loan applications will have to be made directly to Rural Electrification Administration, U.S. Department of Agriculture, Washington 25, D.C. It will be unnecessary to retain services of any agents or representatives to assist in obtaining loan. This does not, however, relieve company of expense of making proper application, & proper studies & compiling data to show uses for which loan will be made.

* * *

"Go Slow" Strategy on tax bills is becoming apparent in administration circles. President Truman expects Congress to delay work on taxes until he sends special message detailing his ideas. Washington observers report it will call for some excise tax cuts, higher levies on estates & gifts, & probably boost in tax rates on corporate profits & on personal incomes in middle & upper brackets. On some of these changes congressional committees could be expected to hold lenthy hearings.

Though many congressmen are eager to begin hacking at excises, ing number of influential members indicate desire to go slow. Delay may help, rather than hinder, cause of excise tax relief in long run. Congressmen need time to decide whether they have enough votes to override presidential veto, in event they defy Mr. Truman's wishes & cut excises without increasing any other levies.

Federal Communications Commission has ordered American Tel. & Tel. Co. to reduce depreciation rates prescribed for its long lines department. FCC said company's current depreciation rates based on book cost of its depreciable plant as of last September 30, totaling more than $833 million, "produce an overall composite rate of 4.52% and an annual depreciation charge of $37,658,000."

New depreciation rates will produce an overall rate of 3.92% & annual charge of $32,724,000, or net reduction of almost $5 million -- decrease of more than 13%. Commission said this net reduction is result of downward revisions in individual depreciation charge on central office equipment, teletypewriters & pole lines.

* * *

After acquiring stock interest of A. C. Stuart family of Texarkana, Texas in four telephone companies, Southwestern Bell Tel. Co., is arranging to dispose of property to Independent companies operating in Texas. The Palestine Co., has been sold to Gulf States Tel. Co., Tyler, which also has taken an option to buy Greenville Tel. Co. Gulf States Co. operates 26 other telephone exchanges in Texas. Arrangements also are being made to dispose of Two-States & United Telephone Companies. Two-States operate telephone exchanges at Texarkana, Clarksville, Jacksonville, Sulphur Springs, Annona and Summerfield. United Tel. Co., exchanges are: Blanco, Llano, Fredicksburg, San Saba, Mason, Marble Falls, Johnson City, Wimberly, Dripping Springs, Round Mountain, Stone Wall and Willow City.

* * *

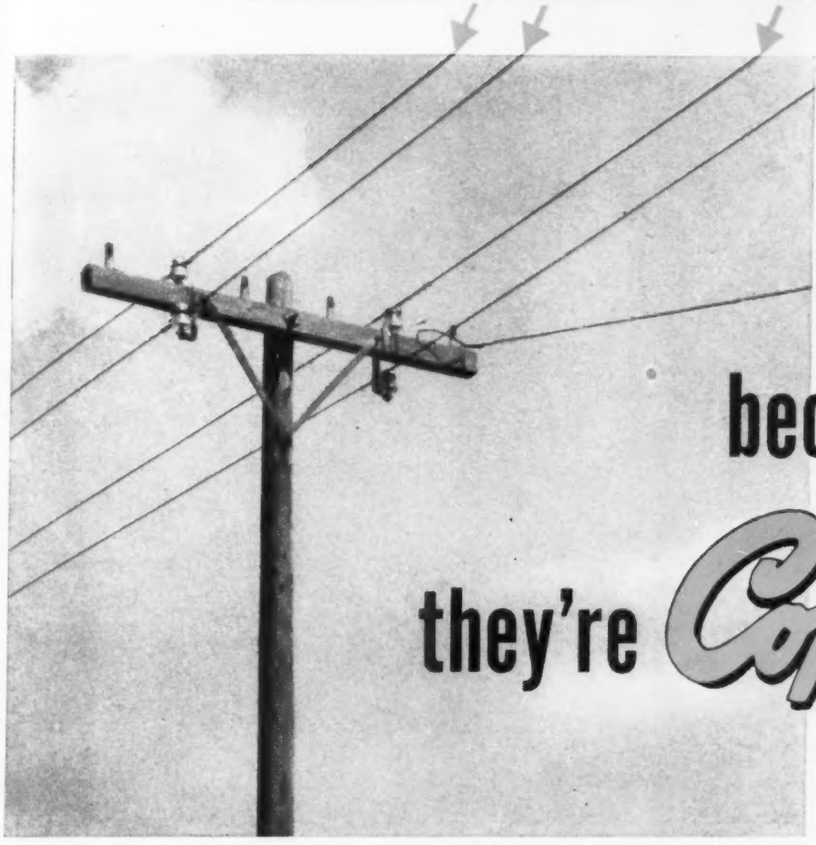
HIGHLIGHTS: Texas Tel. Co. awarded contract for enlarging its central office building in Garland, Tex. Company still has 900 applications for telephone service, after expanding its service from 485 to 2,143 lines since 1940. . . . Texas Farmers Tel. Co., Inc., Belton, Tex., granted charter, for 50-year term, with $20,000 capital. Incorporators: J. Y. M. Dowdy, Roy Harris & Clem C. Countess. . . . Missouri Public Service Commission ordered Ozark Central Tel. Co., which operates in 30 towns in 10 Missouri counties, to devise new rate schedule that would increase revenue not more than $125,000 per year. The Commission insisted that rates be equalized, so cost to subscribers in towns of approximately same size should be about equal.

Chenango & Unadilla Tel. Corp. installing automatic equipment at Brookfield, N.Y. . . . Butler-Bremer Mutual Tel. Co. will convert Tripoli, Ia. exchange to common battery operation. . . . Luzerne Tel. Co. cutover Conynham & Drums, Pa., to automatic operation. . . . N. Henry Press appointed chairman Vermont Public Service Commission; succeeds James S. Holden, appointed judge of Superior Court. . . . St. Bernard (Neb.) Tel. Co. completed construction of 80 miles of new lines.

Ray Smith

Ray W. Smith, Editor

These Wires Stay NEW



—and DROP WIRE, too—

because they're Copperweld

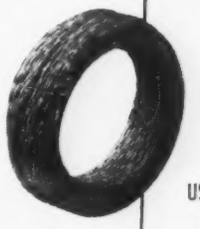
TRADE MARK

More and more telephone companies—including the world's leading systems—are using Copperweld* Line Wire and Drop Wire. They have found that Copperweld Products render long, dependable and economical service under the most severe weather conditions.

The alloy steel core of Copperweld Wire provides rugged strength—permits longer and safer spans. And the thick molten-welded copper covering permanently protects this strength—prevents corrosion—and furnishes high electrical conductance.

Copperweld Wire has the rust-resisting life of solid copper. It stays new—its voice transmission and safety are permanent characteristics. Our Telephone Data Book will give you complete details. Send for your copy today.

USE COPPERWELD LINE WIRE and GRIP-FLEX[38] INSULATOR TIES



USE COPPERWELD DROP WIRE—THE STRONGEST DROP WIRE MADE

COPPERWELD STEEL COMPANY, *Glassport, Pa.*

SALES OFFICES IN PRINCIPAL CITIES

*Trade Mark

Copperweld NON-RUSTING Telephone Products

TRADE MARK

LINE WIRE • DROP WIRE • GROUND RODS AND CLAMPS • GUY AND MESSENGER STRAND
CABLE RINGS • CABLE SPINNING WIRE • NAILS AND STAPLES • GRIP-FLEX[38] INSULATOR TIES

SOLD BY LEADING DISTRIBUTORS

See How KELLOGG Key-BX Can Boost Yearly Operating Revenue!

KEY-BX is a new, attractive source of equipment rental revenue for telephone companies. It's a non-attendant type of wiring-plan equipment for small business subscribers who neither want nor need a paid attendant to handle outgoing, incoming and intercommunication calls. *The Key-BX Box makes each individual his own attendant!* It provides him with one to six trunks to manual or dial exchanges, up to twenty stations, and one or two intercommunication circuits for inter-office telephone conversations or for conference calls between groups of individuals.

Mail This Coupon For Full Details and Key-BX Bulletin.

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Please send me information on how we, too, can cash in on this new rental income.

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CITY..... STATE.....

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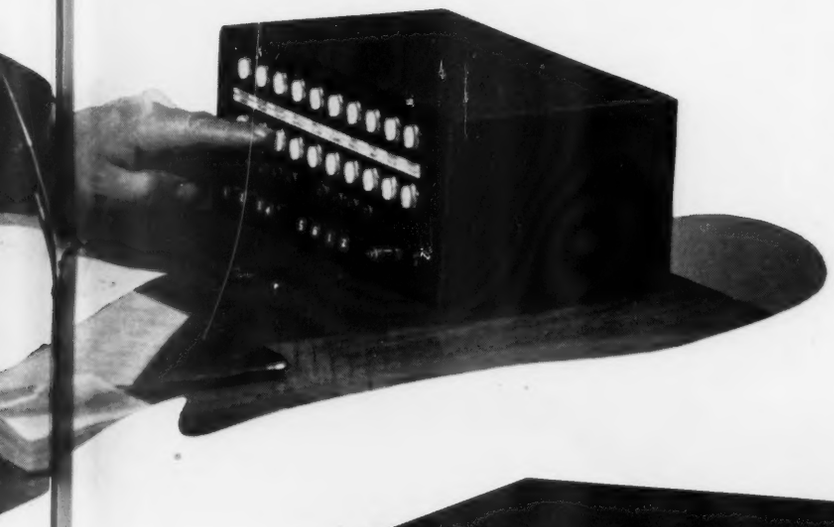

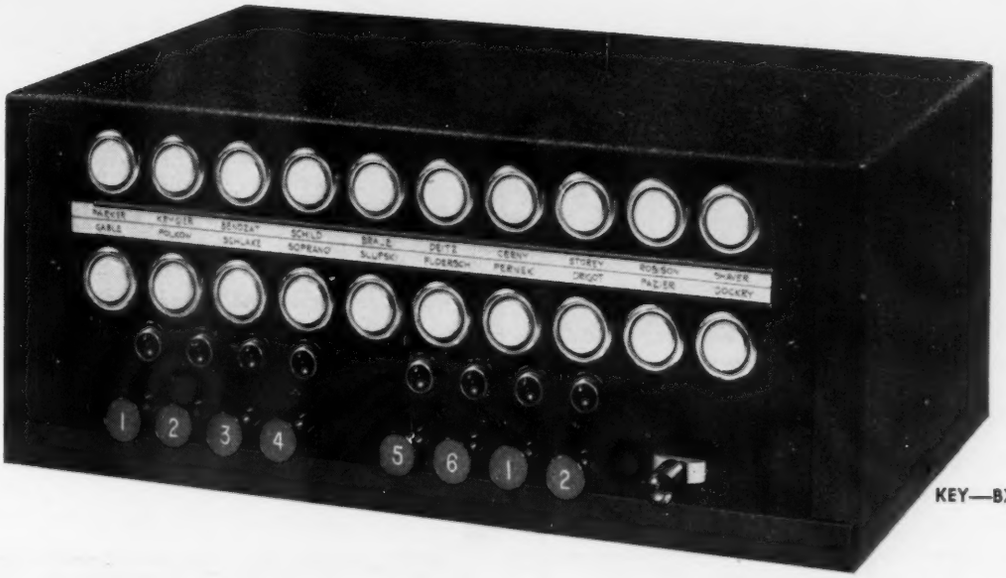

KEY—BX Box

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

Established 1897

KEY-BX SYSTEM

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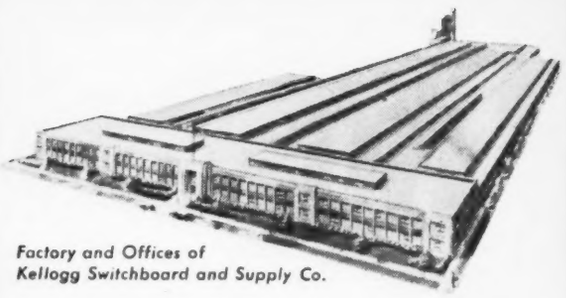
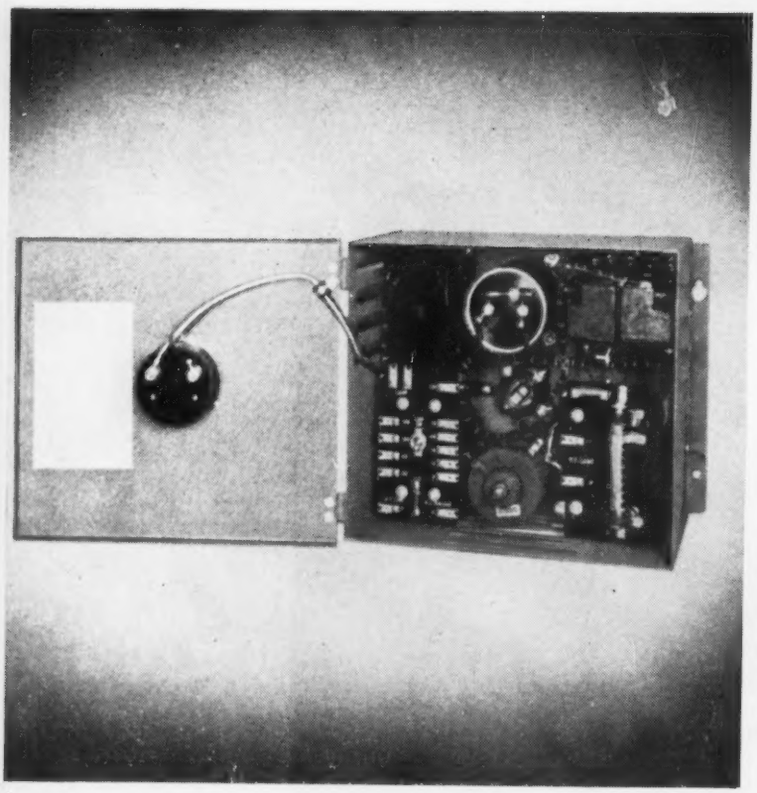
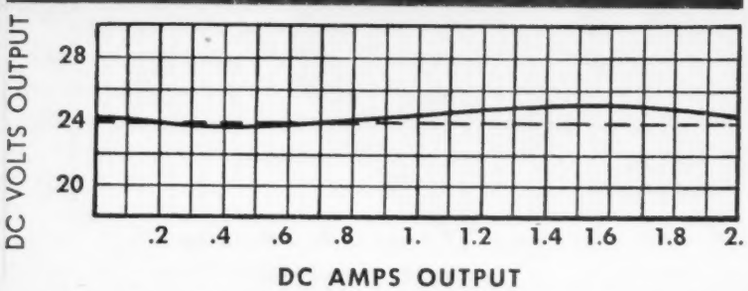


Factory and Offices of
Kellogg Switchboard and Supply Co.

Manufacturers as well as distributors of the finest quality equipment and supplies for the independent telephone field for over fifty years.

Reliable . . . Economical! "Eveready" "Columbia" "Gray Label" telephone dry cells give you utmost dependability, plus definite economy thru higher sustained voltage and extra days of service. Made by NATIONAL CARBON COMPANY, INC., under rigid laboratory controls. Always specify them for highest transmission efficiency at lowest cost.





Steady D. C. Voltage required by switchboard lamps and telephones (especially dial) can always be assured with a RectiFilteR. Chart shows typical curve of DC output voltage under varying loads; proving that this RAYTHEON MFG. CO. unit provides stabilized output voltage regardless of load variations. With no moving parts, maintenance is low.

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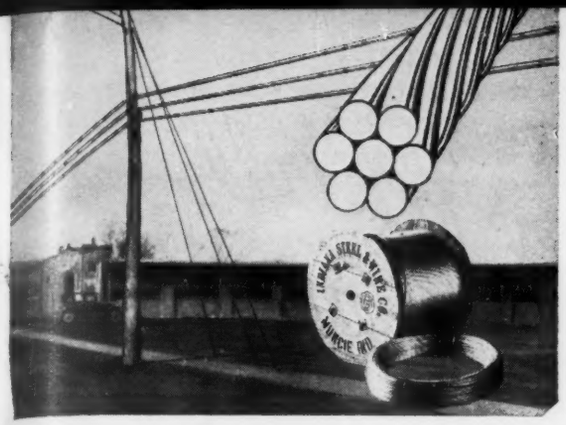
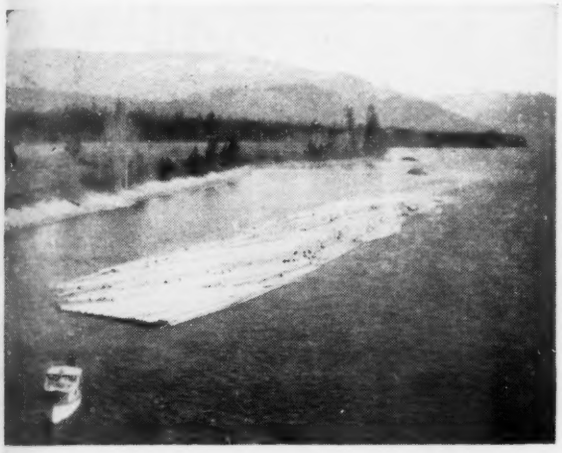
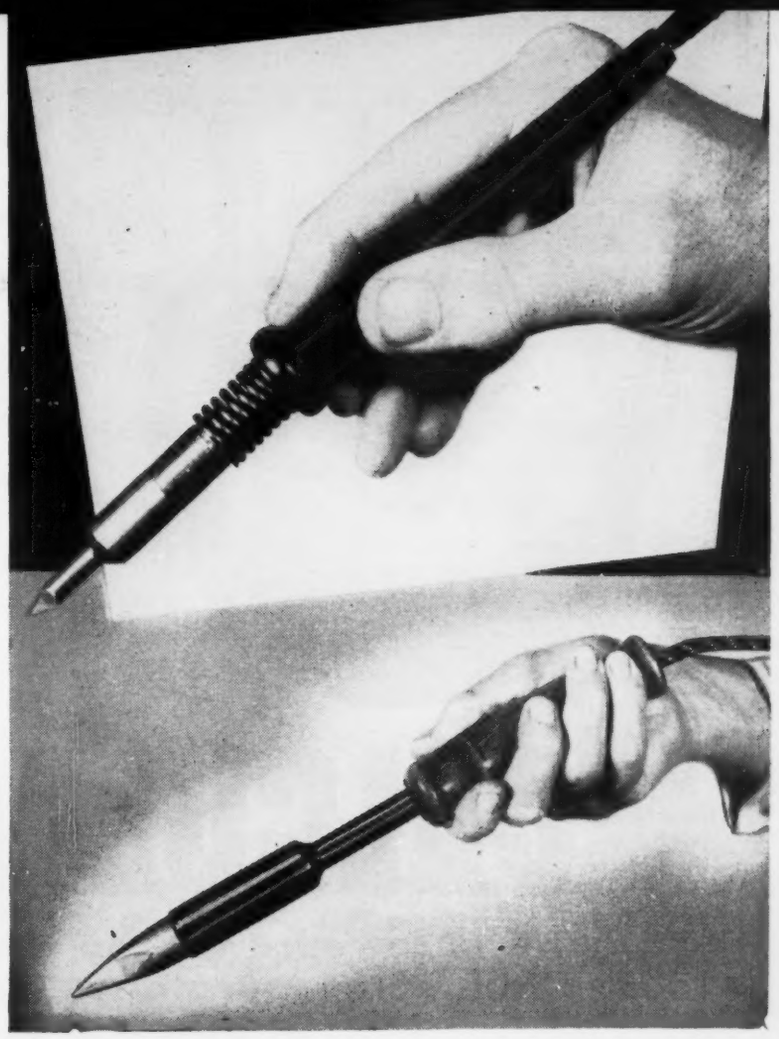
ALL OF THE ABOVE ITEMS MAY BE QUICKLY AND CONVENIENTLY ORDERED FRO



The Time-Tested Steel Strand! A heavy, ductile, tightly adherent zinc coating applied by the famous Crapo Galvanizing Process, provides lasting protection from corrosion in Indiana Crapo Steel Strand. Made by the INDIANA STEEL & WIRE CO., its rugged strength minimizes maintenance.

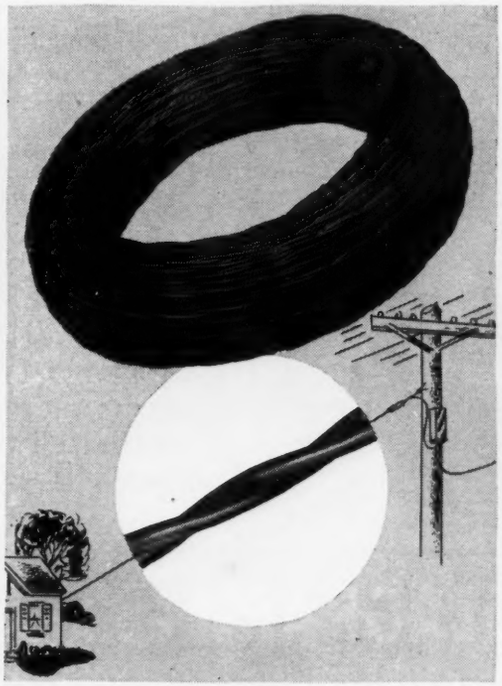


Famous For Strength and Durability, Northern White and Western Red Cedar poles flow toward the MAC GILLIS & GIBBS CO. plants in a steady stream. There they're processed and creosote-treated to insure longer life. Order Mac Gillis & Gibbs poles and watch replacement costs drop!

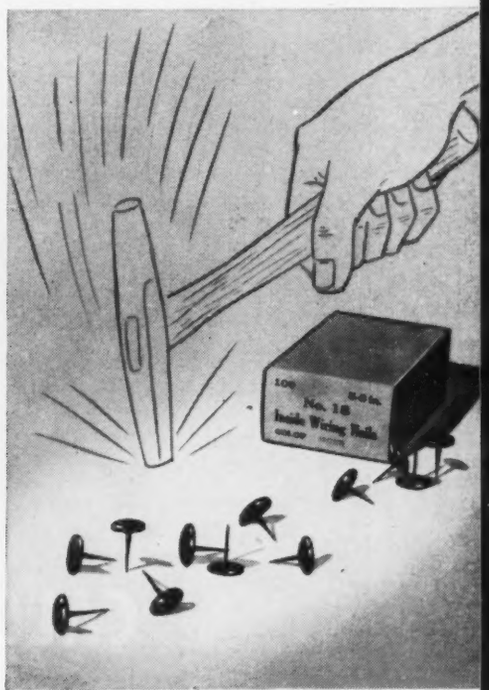


Neat, Precision Soldering is easy when you use a Vulcan Electric Soldering Iron. The high-powered heating element assures a long life of unimpaired heat production. These VULCAN ELECTRIC CO. irons come in 15 sizes of screw and plug tip types—including the "Pygmy" tool, (shown at top) for delicate work in cramped spaces. Copper tips are easily replaceable.

Durable and Silent. The Sub-Cycle Ringing Converter changes frequency without any moving parts. As a result, wear and consequent adjustment and maintenance are virtually eliminated. This LORAIN PRODUCTS CORP. static-type converter comes in several models.



Drop Wire Lasts 30% Longer! GENERAL INSULATED WIRE WORKS Bronze Drop Wire lasts longer because it's drawn of solid, noncorrosive bronze and covered with hard-wearing Neoprene insulation. You'll find that this drop wire is flexible and easy to handle.



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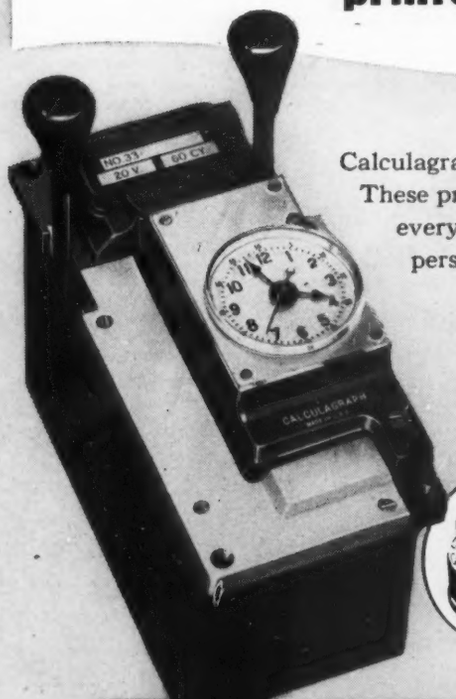
CALCULAGRAPH

is one sure way to collect all the revenue due with accurate, automatically calculated, printed toll time records



Calculagraph printed elapsed time records are accurate to the second. These precise printed records assure collection of all the revenue due every toll call. Automatically computed, they relieve switchboard personnel of time-consuming detail work that slows switchboard service. Calculagraph is the engineered, revenue-vital equipment that no exchange—large or small—can afford to overlook. Available for switchboard or portable mounting, they are fully described in four illustrated catalogs. Write for yours, now, on company letterhead.

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AUTOMATICALLY COMPUTES ELAPSED TIME
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FACILITATES SWITCHBOARD SERVICE
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THE STANDARD FOR ACCURACY SINCE 1892

Before you answer, remember — it's not supposed to be run by anybody. At least, not by any one self-appointed man. Or any privileged class. Or any clique.

As a republic, our country is supposed to be run by our elected representatives. Even a grade school kid knows that.

But when the men we put into office are forced to surrender to the intimidating pressure of special groups, then our free elections are a farce.

Who's Running This Country, Anyway?

When power-lusting minorities can dictate to our government, then this is no longer "a government of the people, for the people, by the people."

There are men in America today who hold no office, yet whose influence is so great that they can bring our free enterprise economy crashing down around our ears.

Who are these men? Their names make the headlines all too often. Just as often, but not as openly, their names are signatures on political petitions to weaken our industries, or deprive states of their sovereign right to regulate business within their own borders.

Like it or not, these are the men who aim to run this country. This aim has your freedom as its final target.

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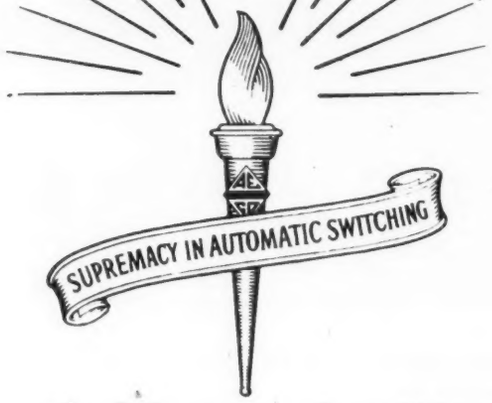

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Whenever you may wish—wherever you may be—the facilities and "know-how" of these four outstanding manufacturing companies are available to you. **First,** to provide a sound basis for consulting with you on your problems—and **then** to supply you with the equipment and material you need.

Through its offices and representatives in all parts of the world, the International AUTOMATIC ELECTRIC Group brings to your problems the experience it has gained by working with and for hundreds of telephone companies and operating administrations. That same "know-how" is applied also to the manufacture of exchange equipment, telephone instruments, wires and cables, and other apparatus—all of finest quality.

For the finest in engineering, manufacture, and installation—for a single exchange or a network, simply address:

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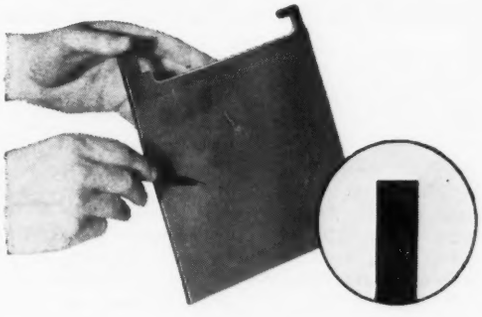
ONLY GOULD PLANTÉ... HAS PURE LEAD PLATES!

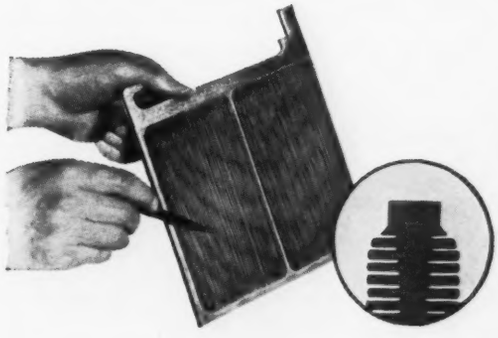
Gould Planté positive plates contain no antimony. They're made of pure lead. That means the longest possible life because there can be no antimony carry-over which is so destructive to the life of ordinary batteries. In Planté batteries, self-discharge and cell capacity loss due to antimonial impurity are practically eliminated. Cells float at the same current rate throughout their life. Thanks to pure lead, antimony-free positive plates, Planté batteries practically last forever . . . are the Aristocrats of Stationary Batteries.

In Gould's complete line of Planté, Floté, Kathanode and Dreadnaught batteries there are types to meet any space, service and capacity requirements for switchgear, signal, alarm system, emergency light and power, and telephone battery users. For full information send for Battery Selector GB-852.

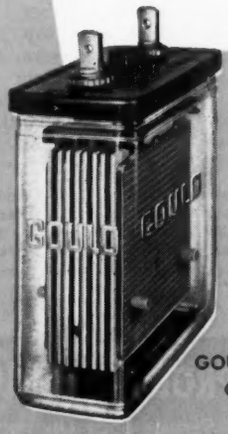
Here's Why PLANTÉ Batteries Practically Last Forever!



1. PLANTÉ POSITIVE PLATE IS MADE FROM THE PUREST FORM OF VIRGIN LEAD. Trimmed blank combines utmost strength with highest metallic purity and electrical efficiency. Circle shows magnified end section of blank.



2. PURE LEAD BLANK IS GROOVED between knife-edged steel discs producing evenly spaced ribs as shown in circle. In operation, the pure lead continually replenishes the active material resulting in exceptionally long life and sustained capacity.



For unfailing power, more years at less cost, specify GOULD PLANTÉ—the ARISTOCRAT OF STATIONARY BATTERIES!

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Locust wood is practically impervious to decay and is impenetrable to moisture. Because of its close-grained hardness locust can be machined into strong, long lasting pins of standard specifications that can be counted on to retain their size and shape.

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Oak pole brackets of unquestioned quality are in demand now as never before in the face of the qualifications necessary in the equipment and materials needed today to "keep 'em talking." Present day maintenance and repair have every reason to demand and get only the best.

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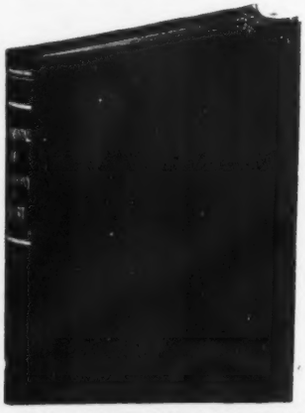
Research and experiment have produced in Hemingray insulators a glass insulator that is better than any ever before offered.

Non-porous, non-deteriorating, uniform coefficient of expansion and high mechanical as well as high dielectric strength are some of the many qualities that rank Hemingray the "best on the line."

BUCKEYE TELEPHONE and SUPPLY CO.
COLUMBUS 6, OHIO

A Simple, Up-to-the-minute Guide to Telephone Fundamentals

to give you the groundwork you need for best results in practical work.



This telephone book tells how modern telephone systems operate, giving the electrical theory and the technical information on equipment and circuits that will be most helpful as a foundation for the non-engineering worker in telephone installing, servicing, etc.

FUNDAMENTALS OF TELEPHONY

By ARTHUR L. ALBERT

374 pages, 5½ x 8½, 200 illustrations, $3.75

This book provides the telephone worker with an understandable treatment of the technical aspects of his work, valuable as a key to better results and improved skill in any job he may undertake. The fundamentals of electricity and acoustics are covered, followed by a full elementary treatment of telephone equipment and circuits, their elements, characteristics, functions, etc., illustrated by many numerical examples.

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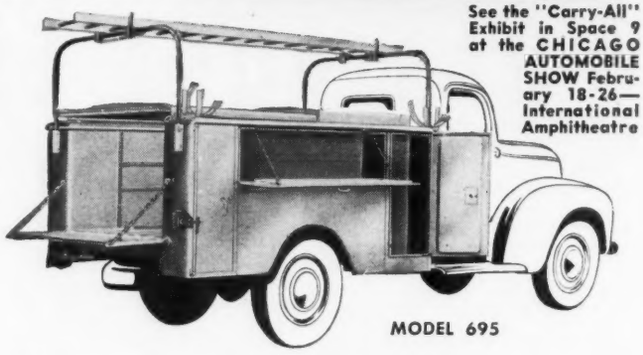

See the "Carry-All" Exhibit in Space 9 at the CHICAGO AUTOMOBILE SHOW February 18-26—International Amphitheatre

MODEL 695

Designed for the Telephone Industry

THE MORRISON "CARRY-ALL" ALL-PURPOSE SERVICE and UTILITY BODY Saves You Money — Through Party Line Economy!

A hundred light industries share the Morrison "Carry-All" line with you . . . A hundred share the costs of dies, presses, factory overhead, etc., . . . A hundred users (instead of only one) make possible the savings which are passed on to you!

THE WORLD'S NEWEST and FINEST SERVICE and UTILITY BODY at a BARGAIN PRICE!

PRECISION! Completely precision designed, engineered, tooled, die stamped and assembled . . . interchangeable parts . . . weatherproof compartments!

PRICE! Never before have utility bodies been MASS Precision PRODUCED on such a scale! You buy for less, because it's built for less!

PROPORTIONS! Here's a service and utility body with great open spaces! Unlike conventional service bodies, the Morrison "Carry-All" gives you "express body floor space" — heavy duty, reinforced floor space, at that! All utility compartments are over the wheels. No waste space! Every inch — from bumper to tail gate, from port to starboard — is working for you! One of the five models of the "Carry-All" will give you the exact body length — the precise compartment measurements — the right proportions for any job!

PRACTICABILITY! Greater payloads . . . Unequalled versatility! All high tensile steel construction . . . Bridge-type underbody construction . . . Offset-reinforced non-skid, heavy load floors . . . All compartments Wise key locked and handled (locking automatically) . . . All doors of inner and outer stampings, welded together . . . Reinforced, stamped man-carrying top . . . Bassick center control of single closure, dual latch, paneled doors . . . 25% weight saving but heavier loads! The Morrison "Carry-All" fits any standard commercial ½, ¾ or 1 ton chassis.

The all-industry Morrison "CARRY-ALL" is carried in stock for immediate delivery to franchised chassis dealers by more than 50 established truck equipment distributors strategically located from coast to coast.

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SERVICE UTILITY MORRISON
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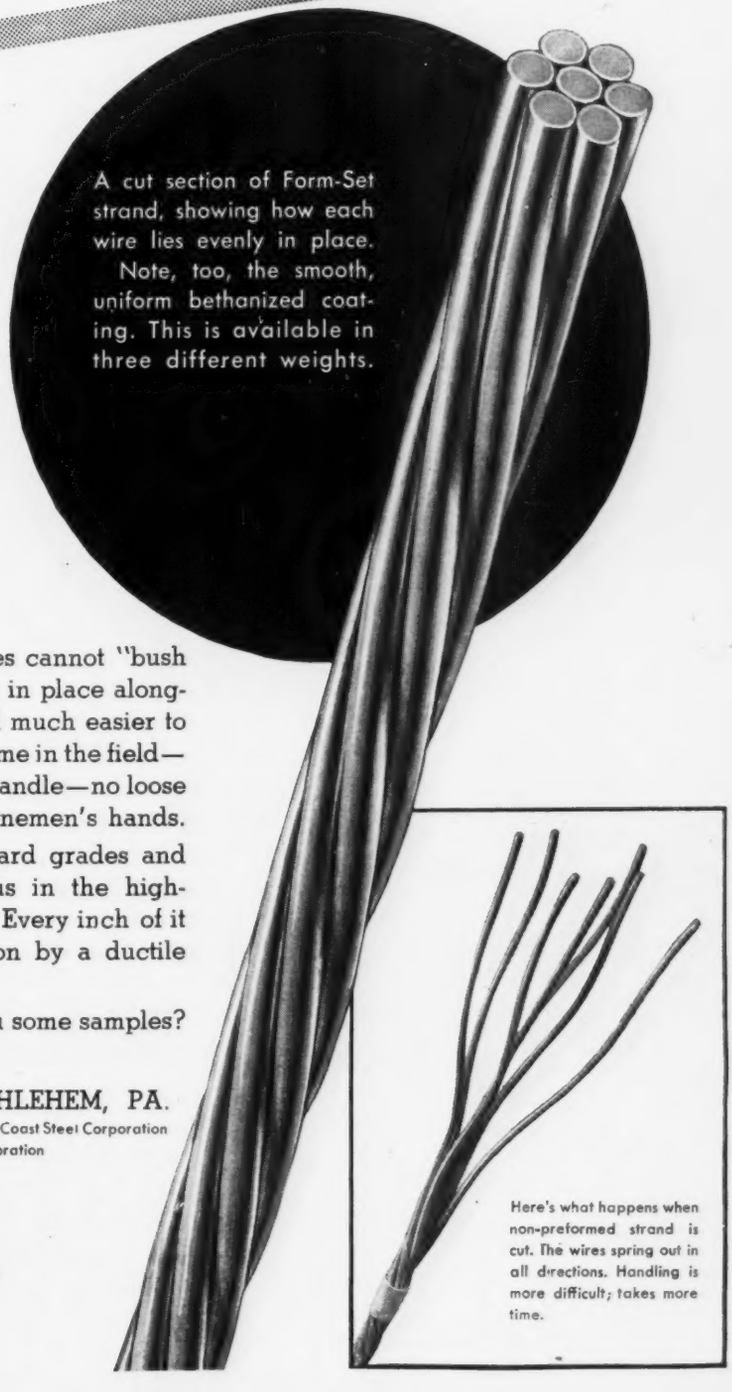
FORM-SET STRAND HAS *Extra* FEATURES THAT COST YOU ALMOST NOTHING!



A cut section of Form-Set strand, showing how each wire lies evenly in place. Note, too, the smooth, uniform bethanized coating. This is available in three different weights.

Bethlehem's preformed strand, known to the trade as Form-Set, has certain advantages that don't exist in the usual non-preformed type. Yet it sells for *very little* more than ordinary strand; the added cost is astonishingly low. Hence those extra features are yours for almost nothing.

What *are* the extra features? Here they are in a nutshell:

When Form-Set strand is cut, the wires cannot "bush out" or fly apart. Each wire lies placidly in place alongside its neighbors. This makes the strand much easier to handle; easier to insert in fittings. Saves time in the field—and temper, too. Also, it's much safer to handle—no loose wires sticking out to gouge or scratch linemen's hands.

Form-Set strand is made in all standard grades and sizes, but it is particularly advantageous in the high-strength and extra-high-strength grades. Every inch of it is bethanized—guarded against corrosion by a ductile zinc jacket applied electrolytically.

Why not let a Bethlehem man show you some samples? There's nothing like seeing for yourself!

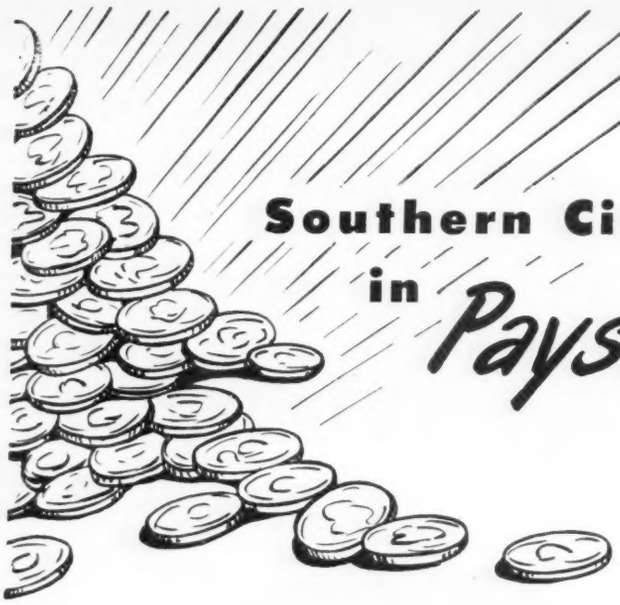
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation

Export Distributor: Bethlehem Steel Export Corporation

★ BETHLEHEM STEEL ★

Here's what happens when non-preformed strand is cut. The wires spring out in all directions. Handling is more difficult; takes more time.



Southern City* shows 50% increase in *Paystation Revenue*

***You** can equal or better this in your territory with...*

Autelco-Gray PAYSTATIONS

One of the many available types of income-producing Autelco-Gray Paystations.

You'll add to your revenue in almost any community by putting in pay stations. You'll add more to your revenue by following this simple, tested strategy:

- Have enough paystations.
- Survey every likely location for possible additional installations.
- See that they are in favorable locations, away from noise but easily accessible.
- Use attractive booths — and see that they are cleaned and well lighted.
- Mark paystation locations with attractive signs.

In a few months these simple steps added 50% to paystation revenues in one typical Southern city, as compared with the same period in the previous year!

*Winston-Salem, N. C.

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems

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EDITORIAL

REA Telephone Loan Terms Are Tough

TELEPHONE companies that have been expecting to obtain loans from REA on easy terms will be grievously disappointed when they study the terms promulgated late in December by REA. With the exception of the low interest rate—2% (which is fixed by the law) the terms are as tough as or tougher than those to be expected from banks or other commercial lenders.

REA is presumably very fearful of defaults by telephone company borrowers. The result is that few existing small telephone companies can or will be willing to qualify for REA loans under the terms announced. It will apparently be easier for new organizations—such as co-ops—to qualify than for existing small telephone companies to do so.

Two provisions of the loan terms—that of Area Coverage and that of "Rates, Charges and Reserves"—coupled together, will present a perplexing problem to any borrower, particularly those in large or sparsely settled areas. The first provides that the borrower must agree to supply service to all applicants in the area, as rapidly as possible. The second provides that borrowers must . . .

> ". . . establish rates and charges that will yield sufficient revenue to cover all operating and maintenance expenses, including replacement, taxes and insurance, and all payments of principal and interest on the loan . . (and) to establish and maintain proper reserves for operating expenditures, replacements, payments on loans and other purposes as specified by REA".

Few, if any, rural telephone systems have been able to accomplish all those latter things without the obligation of full area coverage, which will require long lines to be built and maintained without regard to their commercial practicability.

In other important respects the loan terms will be a serious disappointment to many potential borrowers. One is REA's provision that "normally, a first mortgage will be required on the borrower's entire system".

Even more difficult to many would-be borrowers will be the provision that . . .

> " . . . the borrower will be required to provide equity, supplementing the loan, amounting to 10 to 50 percent of the total value of the borrower's system, including the facilities financed by the REA loan. In some cases even more than 50% equity may be necessary".

Additional to all the foregoing, borrowers must conform to REA construction specifications, use equipment and materials acceptable to REA, employ engineering services acceptable to REA, maintain a system of accounts satisfactory to REA, and agree that REA may pass upon the reasonableness of "all expenditures, and contracts and arrangements affecting security, such as salaries, dividends, service and operating contracts and arrangements".

Also, in certain cases, borrower must agree to approval by REA or its managerial personnel, and to removal and replacement of such personnel when REA requires that, and must submit to a number of other controlling or managerial activities by REA, including such things as: "Transmission promptly to REA of certified copies of the minutes of all meetings of members and of directors".

This all sums up, we think, to a situation where any existing telephone company that could qualify for an REA loan under the terms promulgated by REA, could qualify for a loan from banks or other ordinary existing channels, and without all the managerial powers demanded by REA. Their difficulty there would be, of course, one of long standing—commercial lenders do not want small loans. But, if reports are correct, neither does REA—it is unofficially reported that REA will not bother with very small telephone companies.

REA Administrator Wickard is reported to have said that it is his hope that the telephone industry itself will take care of the rural telephone situation—presumably by the use, where loans are necessary, of REA loans. But under the loan terms promulgated by REA, it will be very difficult for many of the some thousands of small telephone companies to do their part in accomplishing that.

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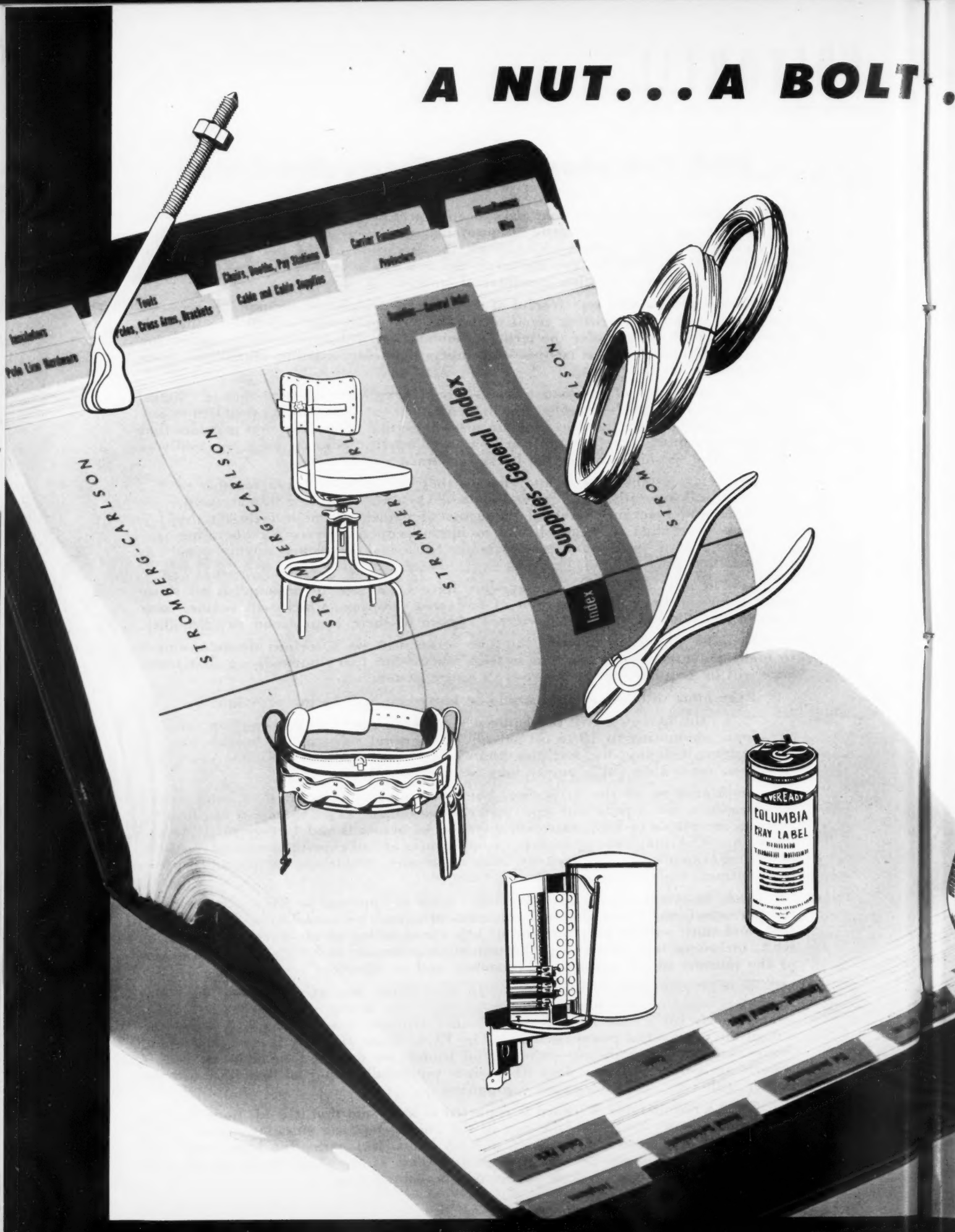
A NUT... A BOLT...



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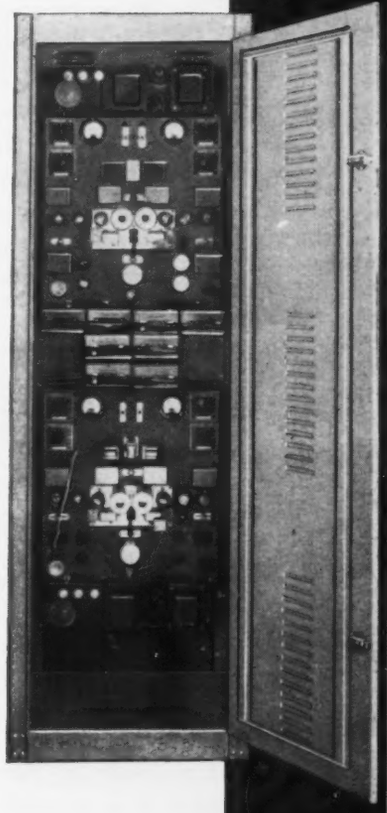

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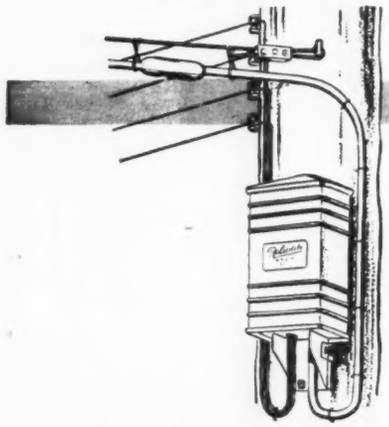

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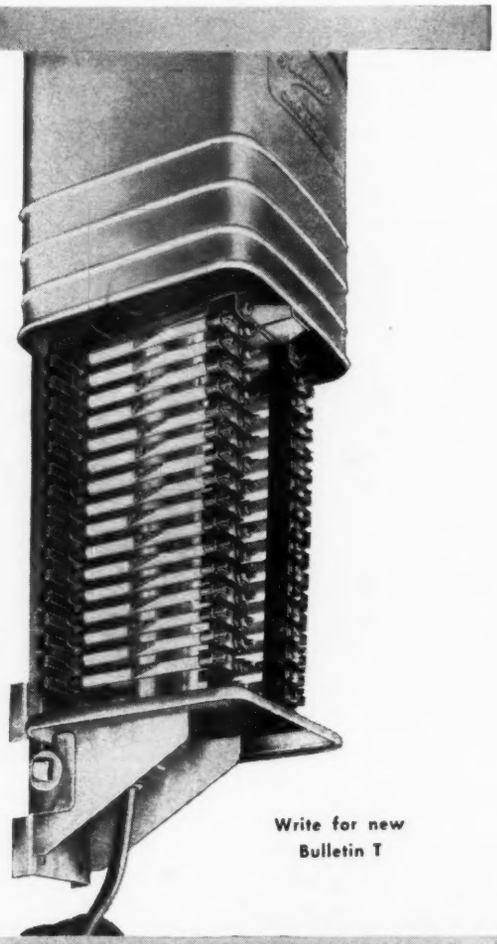
B-27 PROTECTED CABLE TERMINALS



These features—plus many more—are standard with Reliable's B-27 Cable Terminals. With a record of many years of fine performance, these terminals have time-proved dependability—a dependable life greater than that of the cable itself. Installation is speedy...the mounting bracket is attached without gaining the pole; then one man installs the terminal. B-27 is equipped with No. 27L 5-amp. ceramic fuses, available in 11, 16 and 26 pair capacities. Year after year, it's Reliable...for features that mean uninterrupted communications and quality service. In a word: It's RELIABLEity!

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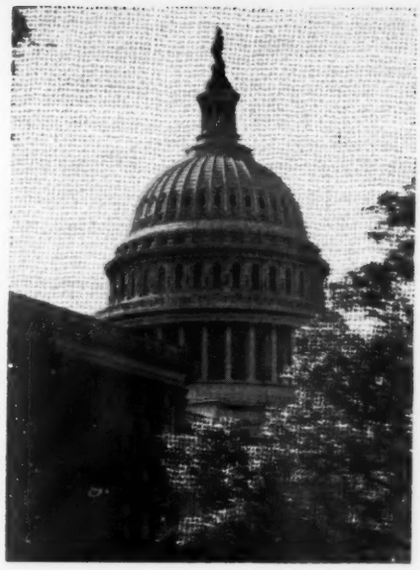
OVER 40 YEARS' *Service* TO THE TELEPHONE INDUSTRY



WASHINGTON BUREAU REPORTS

by Roland Davies and Fred Henck

SIGNPOSTS marked "Federal Government" point to variety of actions which will have sharp effect on many telephone companies during 1950.

THE 1950 road for the Independent telephone industry has a substantial number of signposts marked "Federal Government" and these point to a variety of actions which will have a sharp effect on the operations of a good many of companies in the industry.

Looming up first—and in the immediate offing—is the new 75-cent minimum wage which will take effect this month, on January 25. The new wage minimum has already made it necessary for a number of telephone companies to go to their state regulatory agencies seeking rate increases and it is anticipated that the number of such moves will be consistently on the increase through the year as the new pay scales, which will follow the minimum boost, are put into effect.

How the Independent companies will be affected by a ruling from the Wage and Hour Division of the U. S. Labor Department on operator learner permits was undetermined at this writing but it was expected that the Federal agency would grant a revised pay scale below the minimum for the smaller Independents with a possibility also seen of a longer learner period. The present period amounts to about three months and pay during that period is adjusted to permit lower-than-minimum scales.

The Independents were not alone in seeking a lower than minimum scale for their operator trainees. The Western Union Telegraph Co. at a hearing Dec. 22 also presented views which advocated a pay scale lower than 75 cents per hour for its messengers below the age of 18 with consideration having been given to effect on employment if the higher rate had to be paid.

Apropos of such recommendations to the Wage-Hour Division, Administrator McComb has pointed out that hearings, such as those held for Western Union and the earlier sessions attended by representatives of the Independent telephone industry, are held "in order to prevent curtailment of opportunities for employment, and if such necessity is established, what rate should be authorized."

The next Federal agency action of heavy impact on the Independent industry will be the expansion of the Rural Electrification Administration to develop the program and policy in connection with the REA telephone loan program.

Last month the REA began its actual hiring of new employees who will be responsible for the loan program. Two consultants were named to assist REA Administrator Claude R. Wickard and by Jan. 15, the agency announced, about 20 young electrical engineers—recent college graduates—were to be hired for training in the telephone field. It was pointed out, incidentally, that the announcement of the engineer hiring program was not to be considered a "job opportunity" for men now in the field since those selected for the posts will be taken from existing Civil Service registers of electrical engineering graduates seeking government posts.

The consultants named by the REA were Daniel B. Corman of Louisville, Ky., a telephone plant engineering and management consultant for the past 25 years for small and medium-sized companies, and Virgil P. Russell, until recently Deputy Chief of the Communications Rates and Finance Branch on the staff of the American military government organization in Germany. Mr. Russell is expected to concentrate on financial matters.

Work of formulating the loan application form and other necessary papers to be used in the telephone loan operation was completed the latter part of last month and the application form was made available for those seeking government loans for telephone projects under the conditions finally laid down in the Hill-Poage bills.

As of the latter part of December, also, a tabulation showed that the REA had received upwards of 900 letters of inquiry about telephone loans, with about two-thirds of them coming from existing telephone companies and farmer mutuals. The one-third which did not come from existing operating companies makes up a significant figure of 300 such letters. And it is viewed that the proportion of such inquiries will go sharply upwards during 1950, demanding that the REA keep a sharp lookout to prevent duplication of facilities.

On the latter point there is also some well-founded cynicism in circulation to the effect that the question of duplication of facilities can take on various hues of meaning when the matter of telephone loans becomes a local political issue and the politicos, for their own purposes, begin to put the pressure on the REA for their constituents.

In the field of excise taxes, pressure for reduction of the wartime levies, particularly on communications and transportation, has started to snowball with even the White House now indicating that some lowering of such tax charges can be expected to come out of the session of Congress, which started this month. The Washington prognistication is for some limited cuts in excise taxes. Not to be forgotten is that 1950 is a big political year and the sound of a tax cut always rings the loudest during such a time—with the consequent polling of votes for proponents of reduction.

Secretary of Commerce Sawyer has sounded the bell for the administration on the matter of excise cuts. Although he had refused to make any definite commitments as to the contents of his report to be made to President Truman, the Secretary of Commerce during the month past did declare that there is no doubt that the repeal of wartime excise levies "would be an incentive to business." Commenting on his 15,000-mile around the country tour, Secretary Sawyer conceded that the suggestion most frequently received by him "dealt with the reduction or repeal of excise taxes." Other suggestions, he declared, included a plea for acceleration of the depreciation provisions of the tax laws, to permit businesses to write off capital investments more rapidly; and the elimination of double taxation, under which present corporate income is taxed as such and then taxed again through personal income tax levies on the amounts distributed to stockholders as dividends.

President Truman, meanwhile, announced that Treasury Department experts and the House Ways and Means Committee are studying possibilities of eliminating the wartime levies.

Union Demands

ON THE LABOR front, the Independents can look to the Communications Workers of America (CIO) to launch an intensified organizing drive with a good deal of emphasis placed on the Independent companies, particularly when the latter come into the sphere of the union's divisions holding contracts with Bell System companies in the same general area.

The CWA is expected to have a more streamlined organization by next June—when the union will hold its convention in Cleveland—with more authority coming from the top rung of the telephone labor organization's management. This will give more impetus to organizing drives, it is believed, since there will be more direction coming from the Washington, D. C., headquarters of the union and organizers will be free of other duties during an intensified campaign. Also wielding considerable influence in organizing will be other CIO unions which will come to the aid of the CWA in the latter's campaigns.

Coming Conventions

Minnesota Telephone Association, St. Paul Hotel, St. Paul, Jan. 30-31 *and Feb.* 1.

Texas Telephone Association, Plaza Hotel, San Antonio, Mar. 6, 7, *and* 8.

Kentucky Independent Telephone Association, Phoenix Hotel, Lexington, March 14.

Illinois Telephone Association, Abraham Lincoln Hotel, Springfield, March 22 *and* 23.

Nebraska Telephone Association, Paxton Hotel, Omaha, Mar. 28 *and* 29.

Iowa Independent Telephone Association, Fort Des Moines Hotel, Des Moines, Apr. 4 *and* 5.

National Executives' Conference (United States Independent Telephone Association) Edgewater Beach Hotel, Chicago, Apr. 17 *and* 18.

Ohio Independent Telephone Association, Deshler-Wallick Hotel, Columbus, Apr. 24, 25, *and* 26.

Indiana Telephone Association, Claypool Hotel, Indianapolis, May 3 *and* 4.

Pennsylvania Independent Telephone Association, Roosevelt Hotel, Pittsburgh, May 8 *and* 9. *(Tentative).*

Kansas Telephone Association, Jayhawk Hotel, Topeka, May 16 *and* 17.

New York State Telephone Association, Seneca Hotel, Rochester, May 24 *and* 25.

Automatic Electric Charges Infringement On Record Number Of Patents

Casper W. Ooms, formerly head of the U. S. Patent Office in Washington and now representing Automatic Electric Company, telephone equipment manufacturer, Chicago, on Jan. 11 filed a counterclaim in the U. S. District Court at Wilmington, Delaware, on behalf of the Automatic company charging Federal Telephone and Radio Corp., an I. T.& T. affiliate, with infringement of 85 patents in the installation by Federal of automatic telephone equipment in various cities in the United States.

Among the cities involved are Rochester, N. Y., Lexington, Ky., Elkhart, Ind., Tallahassee, Fla., San Angelo, Tex., and Oxnard, Calif.,

This action, according to Mr. Ooms, represents a charge of infringement of the largest number of patents ever involved in a patent suit in the United States.

The Automatic company is seeking treble damages of seven and one-half million dollars for infringement of its patents. Automatic is also seeking an injunction to prevent Federal from manufacturing and selling automatic telephone equipment in the United States which infringes its patents.

Automatic Electric is the originator of the automatic telephone and has been engaged in manufacturing and supplying automatic telephone equipment for use in cities and towns throughout the United States and abroad for nearly sixty years.

From time to time the Automatic company has licensed various concerns both in the United States and abroad to manufacture automatic telephone equipment under its patents.

Maryneal, Tex. Exchange Has New Owners

C. D. Leonard and *W. S. Dow*, Sweetwater, Texas, have purchased the Maryneal, Texas exchange from the *San Angelo (Texas) Telephone Co.* Mr. Leonard reports that Maryneal has been without a telephone exchange since the "big freeze" in January, 1949, and that improvements and repairs are now in progress.

Rural Telephone Loans

By Bill Corman

APPLYING FOR and accepting an REA loan is a management decision which should be based on clear grasp of all factors involved.

HI, NEIGHBOR! I imagine that by this time you will have seen a copy of the little pamphlet that REA has put out entitled, "The Rural Telephone Loan Program". It answers many of the questions that everybody has been asking, and for that reason is well worth a quick once-over. It also indicates that Mr. Wickard has grasped some of the fundamental problems of the rural telephone situation, and, in doing so, has discovered that he has a peculiarly tough piece of meat to chew on. Also, the pamphlet has a good deal more information between the lines than it does on them, and for *this* reason, merits the most careful study possible.

That last line is not meant as a criticism—merely a statement of fact is the intent. Personally, I think Mr. Wickard has achieved a small miracle by getting the pamphlet out as soon as he has. I, for one, did not expect it this soon. The pamphlet indicates that he has had the very good judgment to go to people who are familiar with the small telephone company for information. And, as a preliminary statement of general facts and information and interpretations, it covers the ground as well or better than could have been expected. But as such, it has had to leave a good deal between the lines.

A rather careful study indicates that what a lot of us have believed all along would be the case, is actually true. As in the case of practically every other such law, the manner in which the law will actually work will depend 10% on the law, and 90% on the administrator's interpretation of it. The pamphlet gives some broad hints as to what this interpretation will be. But the wording leaves the door wide open for the imposition of any and all restrictions, conditions and terms that REA deems advisable. The hints at what some of these will, or could, be are frankly both good and bad. Let's take some specific things and look at them.

First, let's take the paragraph entitled, "Borrower Eligibility and Preference". On page 3 is stated: "Loans may be made to a new organization (presumably a co-op or a switched line) before October 28, 1950, only if—", and here follow two conditions. #1—If "no existing company engaged in serving rural areas has made application (to REA) to serve substantially the same subscribers". Getting the double-negative confusion out of that statement, what it says is, in effect—A co-op *may* secure a loan *before* October 28, 1950, providing the existing company in the area has not filed an application for a loan *with REA*. Of course, in *some* states, the approval of the loan would have to be secured from the state commission, and in all states where such approval is not necessary, the REA would have to certify that no duplication of existing *adequate* service would result—the definition of both "duplication" and "adequate" resting with the administrator. It would appear, therefore, that the only way to prevent loans to new organizations before October 28, 1950, is for the existing company in the area to make application to REA for a loan. Conversely, it does not appear that application for a loan from private sources would prevent REA from considering and approving a loan to a new organization. What a state commission's attitude would be in a situation like this is hard to say, although it would be logical to assume that only one of such conflicting loans would be approved. Which one would depend upon the commission and upon the circumstances.

The second "if" is as follows: If "an application for a loan (from REA) from an existing company to serve substantially the same subscribers has been considered and found not to comply with the requirements of the act". Restating this sentence, it reads—A loan may be made to a new organization (co-op or other) before October 28, 1950, even if the existing company in the area has made application to REA for a loan, provided REA considers and, for some (any) reason, turns down the application.

Keep in mind that the above "if's" are conditional only to loans *before* October 28, 1950. *After* that date, Neighbor, the bars are down, completely. For all practical purposes of interpretation, it can be assumed that *within a few weeks* REA will theoretically be able to lend money to new organizations to build telephone lines or systems in your area. Your only defense against this will be that such a loan would result in duplication of existing adequate service. In the final analysis, it appears to me that your defense will rest within your state

commission—and the effectiveness of such defense will rest primarily on the law under which your state commission operates, and secondarily, on your commission's reaction.

The law under which your commission operates is stressed, because in many cases those laws actually hamstring the commission in its efforts to provide protection to telephone subscribers and to companies.

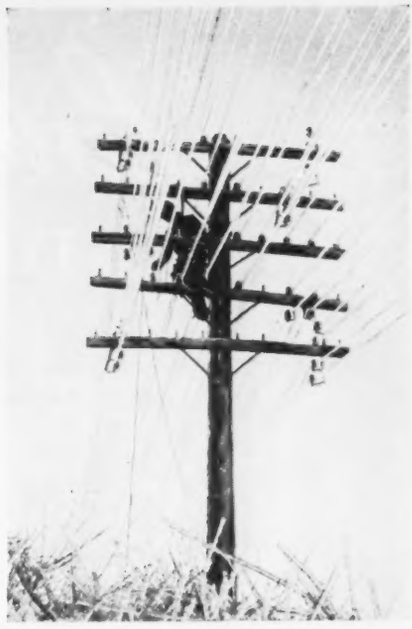
Now, why, you might ask, all this emphasis on "new organizations"? Simply because most of the fingers seem to point in that direction. There are considerable fingers of such evidence. In the first place, there was not much doubt at the time the RTA law was being debated, but that the primary purpose of passing the law was to increase rural telephones *through the use of co-ops*. The telephone associations, by much hard work and a five year battle, got the law worded at least so that existing companies were elevated to a more nearly equal position. In the second place, Mr. Wickard recently made a speech in Birmingham to a farm group. It was reported to me that he told that group in effect: don't depend too much on the existing companies for rural telephones—go out and form your own co-ops. In the third place, the pamphlet about which we have been talking, states, on page 6, that one of the factors of security in determining how much equity capital the borrower will have to provide would be "the extent to which widespread community interest, as represented in the ownership, management and patronage of the telephone enterprise, tends to assure continuity of (a) subscriber use of the service, and (b) efficient management and control." One can hardly read those words in any other light than that REA considers the co-op (widespread community interest) form of enterprise to be more secure and to insure more efficient management, than a privately owned and operated system. That statement, incidentally, also leaves the way open to the granting of more liberal terms (as to the amount of equity required) to co-ops than to privately owned systems. I am not saying that such will be the case, understand—I am saying that the way is open for it to be. It goes back, again, to the administrator's interpretation.

Let's talk a little further about that equity business. When the pamphlet says on page 7, that the borrower will be required to provide equity amounting to 10 to 50 percent (in some cases, even more) of the system, it means that if you borrow $50,000.00 from REA, you will be required to put up from $5,555.55 to $50,000.00 (or more) in cash or existing property which you can prove is worth that much. That Mr. Wickard has fixed the minimum as low as 10% is evidence that he has had some good advice, for it has been one of the difficulties in the way of small company borrowing when the percentage was set at from 50 to 60% and higher. The average small company in poor condition now, will be hard pressed to go much over the 10% figure, for while what they have may be worth considerable in terms of furnishing at least some telephone service for some years to come, it is worth very little when and if the system is converted to higher grade service, or when and if extensive additions of high grade service are made. If Mr. Wickard expects to be of service to the subscribers of these small companies, he will, of necessity, have to be very liberal in this matter of equity capital. For equity capital, under the implied terms and restrictions of REA loans as pointed out in the pamphlet, will be as scarce as hens' teeth. And the puzzle that he will find himself faced with is that the smaller and *less secure* the companies to which he makes loans, the *lower* this required equity will have to be. Neither, he will find, is simple size (number of stations) the basic consideration—average per-station cost and average per-station revenue create the ratio wherein a telephone company is secure or insecure. And the fact that the widespread addition of rural telephones *raises* the per-station cost, and *lowers* the per-station income of the average telephone company is the dilemma he must now face.

Widespread rural service brings up the question of area coverage—and it is in this realm that the pamphlet goes in for double talk. After recognizing and setting forth the financial hazards of rural telephone service (page 6), it goes on to set up as one of the Loan Document Provisions, the following: "Borrowers will agree to accomplish area coverage telephone service by making service available to all applicants for service within their rural areas, as rapidly as practicable." Notice that the wording is not "if practicable", but is "as rapidly as practicable". I hope there is no difference in the two phrases, but there could well be. On the other hand, the pamphlet goes on later to say that, "borrowers will establish rates and charges which will yield sufficient revenue to cover all operating and maintenance expense, including replacement (presumably adequate depreciation). . ." And still later, it says: "Such rates and charges shall also be consistent with the achievement of the basic purpose of the telephone legislation, namely, 'to assure the availability of adequate telephone service to the widest practicable number of rural users'." How those three statements add up to anything less than double-talk, I have not been able to figure out. The only word that gives the statements anything resembling logic is the use of "practicable". But if practicability is to be interpreted not in the light of "if" but of "how soon", then the three statements revert to direct conflict. Accomplishing rural service to all applicants as rapidly as possible is one thing. Charging rates sufficient to cover expenses that will assure service to the widest number of users is another. The borrower is directed to do both, for both will be "standard provisions" of the loan document. Logic would tell anyone that a happy medium will have to be found, and a happy medium followed in carrying out these two requirements. And yet again, we come back to interpretation—this time it is a placement of emphasis—will the emphasis be on rates and charges sufficient to cover all expenses, or will the emphasis be on area coverage and to heck with adequate rates (and with the borrower's equity)?

Talking about rates and such, there is a phrase quoted above that I have been puzzling over ever since I read it. What is meant by the term, "rates *and charges*"? It could be simply a Washington lawyer's attempt at verbosity and not mean a thing. It could also be a hint that there are to be other charges approved (by REA) than mere rates—such as construction charges, in spite of the fact that that was one of the things over which Mr. Poage et al threw up their hands in horror. The supposition gains further credence by the pamphlet's making it clear that even telephone co-ops will be required to put up at least 10% equity if they get a loan from REA. For just what is the difference in telephone users being required to put up part of the money and calling it, on the one hand, equity, and on the other hand, a construction charge. There are a good many existing companies, I feel sure, who would be glad if one of the conditions to furnishing service to a rural subscriber were that he be required to buy a share or two of company stock (equity), *the returns on which depended on that subscriber, and*

(*Please turn to page* 60)



"When the snow and ice arrive new operating techniques aid rehabilitation of damaged plant."

New Developments And Techniques

By B. C. Burden

Telephone Engineer,
Lincoln, Neb.

BACK IN 1915 labor was cheap and plant materials, by comparison, relatively expensive. Now labor is expensive and materials, while not exactly cheap, play a less important part in plant cost studies. One answer to rising plant costs is *mechanization.* Many operations such as digging, drilling, tree trimming, brush spraying, sawing, etc., are all examples of work operations which can be done much more cheaply by motor or engine driven tools than by simple manual methods. Yet, in spite of the acknowledged savings which can be made with mechanized construction forces, there are still hundreds of companies doing it the hard—and I might add, the expensive way.

As a typical example of doing an old job in a new labor-saving way, I cite a company in Indiana involved in a large construction project requiring installation of a large amount of aerial cable on rural poles. In a carefully planned, high-speed operation one man was stationed on each of four poles. With a hand line each in turn pulled up an electric drill and bored the hole for the cable hanger. As the truck carrying the generator passed along to the next pole, the lineman on the preceding one, bolted on a strand clamp and then moved on to the head of the line to await another turn.

After the strand had been placed and pulled, a truck pulling a cable trailer brought up the rear of the procession. Level ground and the absence of numerous trees made it possible to feed the cable directly from the trailer to a cable spinner which lashed it to the strand. On each pole a man was waiting to cut the lashing wire, clamp it to the strand, and move the spinner around the pole to start on the next span. This assembly line technique plus motorized tools saved an estimated 25% in labor.

Digging By Hand Costly

SOME OF the first hole diggers offered were large elaborate outfits, the cost of which was beyond the application needs of the smaller companies. This situation has been materially changed and now efficient hole digging units are available at prices well within the reach of even the smaller companies.

The relatively new winch line suspended digging augers, which attach to front or rear mounted booms are proving popular with both Bell and Independent companies. These units are much more flexible in their application that the rigidly mounted truck rear end type and can easily be manuvered to reach most hole locations.

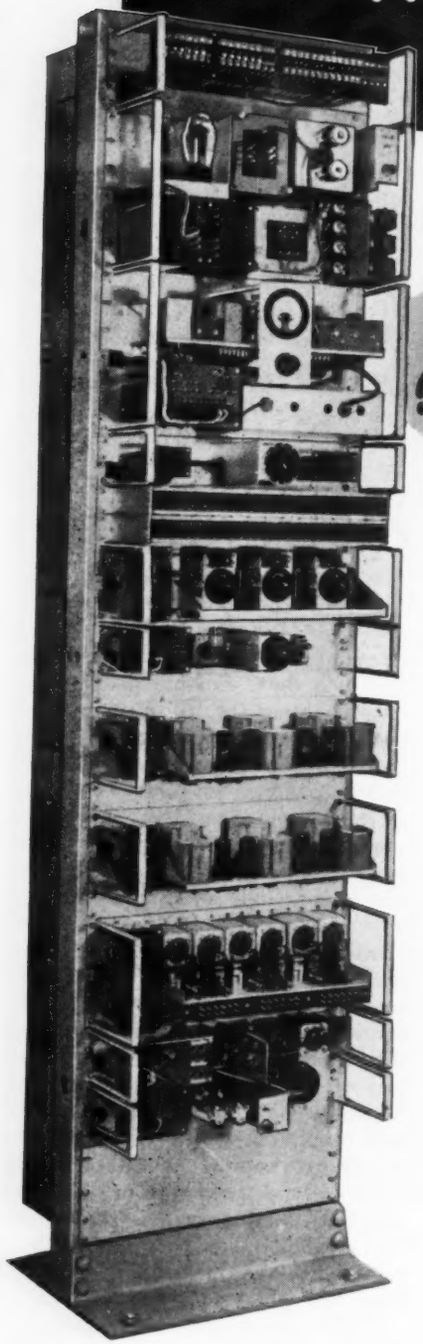
Electric hole digging drills are continuing to find application for small crews and particularly for those exchanges in which a manager and one helper may constitute the entire construction and maintenance force. There is a trend toward 180-cycle power sources for portable equipment as this equipment offers the advantage of lighter weight for a given h.p. than does 60-cycle equipment. Typical of the 180-cycle equipment is the new light weight chain saws. Difficult tree limbing operations can be handled with ease and speed with one of these new saws. Labor savings as high as 60% or better can be shown in tree trimming operations by mechanization.

Mechanize your cable maintenance and tree trimming truck, provide a truck-mounted ladder to cut down on climbing time and effort, and you will be surprised at the savings in labor costs which will result.

The Tree Control Problem

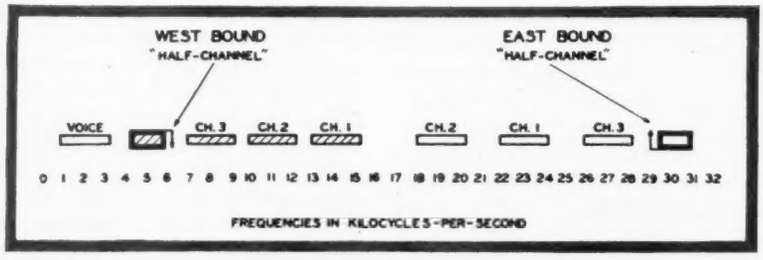
THE CONTROL of tree growth has always been one of the Plant Manager's greatest headaches. An-

Lenkurt TYPE 32D 3 1/2 CHANNEL CARRIER SYSTEM



That 1/2 CHANNEL gives you 9 EXTRA TELEGRAPH CHANNELS

Now, in addition to three normal telephone channels, you can have up to NINE VF carrier telegraph channels, without impairing any of the telephone channels or the physical circuit. A filter system with a lower cut-off allows the Lenkurt Type 32D system to use the otherwise wasted frequencies immediately above and below the carrier channels for an additional "half-channel".


WEST BOUND
"HALF-CHANNEL"
EAST BOUND
"HALF-CHANNEL"
VOICE
CH. 3
CH. 2
CH. 1
CH. 2
CH. 1
CH. 3
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
FREQUENCIES IN KILOCYCLES-PER-SECOND

On the "half-channel", besides the superimposed VF telegraph channels, the modulating carrier frequency is also transmitted at subdued level; after recovery and amplification, it is used for demodulation—thus eliminating all synchronizing problems and precluding any "bias" or frequency drift on the telegraph channels.

The Lenkurt Type 32D system will work over any distance provided Lenkurt Type 32R repeaters are installed at suitable intervals.

WRITE TODAY giving details of your plant layout; we'll send engineering data covering the many applications of the Lenkurt 32D system.

Lenkurt Type 32D Carrier Terminal with protective dust covers removed. Compact front and back rack mounting insures ease of installation and inspection.

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nual tree trimming costs are so high in many exchanges as to be of real concern. The attack on this problem has consisted of everything from simple annual tree trimming to complete removal of all tree and bush growth by expensive bull-dozing operations. Bull-dozing offers a solution to the tree problem in many situations, but is open to the serious objection of high cost. Some feel the remedy is worse than the ailment. Costs as high as $500.00 per mile are not unusual for this method.

The new attack on the tree problem is the use of chemical sprays. The use of chemicals to partially or completely kill tree growth offers considerable promise. Much experience has been had with this method the past two years and with some exceptions the results have been good. Several tree removal companies have conducted extensive experiments and are now offering chemical spray service.

There is nothing complicated about the method, nor is the equipment required particularly expensive. Data on chemicals, dosage and application is available from the large chemical supply houses. Chemical methods should prove useful for complete removal of heavy brush growth or young trees. The spray has one disadvantage, viz., there is always a possibility of damaging nearby crops or valuable shade trees due to the chemical spray drifting in the wind. This can be kept at a minimum by avoiding windy days and by proper handling of the high pressure spray equipment. I am sold on the method and feel that every company which has a tree control problem will be well advised to study up this winter and be all set to give this method a serious try come next spring.

New Transposition Scheme

THE RAPID extension of rural power lines has resulted in high noise levels on many of our rural lines. The high inductive influence of present types of rural power lines means the noise can be kept to satisfactorily low levels only by use of an adequate set of transpositions in the telephone line and by well-balanced C. O. circuits.

The new Bell System R-1 and R-2 transposition schemes are simple yet surprisingly effective in keeping noise levels low on short haul toll lines. These schemes are surprisingly simple as compared to the standard transpositions schemes normally employed on toll or exchange lines. They consist in transposing each pair at every other pole. Transpositions on horizontally or vertically adjacent pairs are staggered so as to fall on different poles. Control of crosstalk between pairs not horizontally or vertically adjacent is accomplished by the omission of certain transpositions on each 25th pole. The R-2 scheme is the same as the R-1 except spacing between transpositions is doubled.

Can We Turn Back?

ALTHOUGH history shows that after a country has started down the road to socialism it is hard to turn back, I believe this nation can do it. The one way of reversing the trend is to develop among people more confidence in our business system. The eleventh hour is here for business to speak for itself. From now on American businessmen must devote as much time to the public relations of their business as they do to finance, production and distribution.

One of the most alarming features in our approach towards socialism is that both major political parties are marching almost side by side. When the government takes the lead in developing human aid, a nation's walk down the path of socialism turns into a gallop. Men of management must help the American people see the welfare state for what it really is—a farewell state—a farewell to all our freedoms.
—H. E. Humphreys.

New Testing Techniques

PLANT EXECUTIVES seeking ways to reduce plant maintenance expense should make a careful analysis of the cost of locating station and line troubles. The combination of antiquated instruments and inadequate training found in some plants can easily account for labor efficiency losses as great as 50%. Despite all that has been said regarding the advantage of multi-range direct reading ohmmeters for general trouble shooting, I was surprised to find on a recent field trip many companies still using only test telephones to locate both line and instrument faults.

Trouble shooting is like rifle shooting—you need training and practice and a good "instrument" with which to do the shooting. Give this same thought to your trouble problems. Find out if your men are equipped with adequate testing instruments. Determine if they understand how to use them for high speed trouble shooting. You may be paying for three men to do a two man job.

High Potential Flashing of Cable

HIGH VOLTAGE flashing techniques for the location of moisture troubles in cable are becoming very popular. The method, though not new, has for various reasons been used extensively only these past few years. It consists in applying approximately 450 volts of d-c potential from a B battery source to a pair which shows moisture trouble but which has such high fault resistance it cannot be located by ordinary methods. The high voltage creates an arc between the two wires of the pair at the point where moisture has entered the cable. The resulting arc welds the pair together, creating a zero resistance short which can readily be located by a tone induction test set. The troublesome "carry-by" effect which is typical of most moisture trouble is eliminated by using the shorted pair for locating the fault. Furthermore, you can determine the approximate location of the fault by simple loop resistance measurements.

The head of the cable department of a large telephone company recently told me he had cut moisture fault location time 50% simply by using the flashing technique on all moisture faults. Development of special flasher sets which eliminate the human hazard inherent to the use of high voltage B batteries has accelerated the adaption of flashing techniques. Put this method down on your list of money saving methods worthy of consideration.

Pocket amplifiers which operate from hearing aid batteries and which use miniature high gain tubes are finding extensive use in the location of cable faults by the exploring coil method. When flasher sets are used to create zero resistance faults the tone picked up is often very weak though positive in its indication as it has no "carry over." By the use of an amplifier with a gain of several thousand it is possible to get a readily audible and accurate indication.

The amplifier is a real asset in locating faults in buried or underground cable. It in now a standard unit in the Bell System.—THE END.

This is more than just a fine magneto telephone. For buying this Leich 900 magneto telephone is like buying an insurance policy on the future.

You're insured if you convert from magneto to common battery operation. Simply removing the generator and changing a few wires converts this Leich magneto handset to a regular common battery telephone.

You're insured if you convert to dial too. A special dial mounting bracket makes the addition of the dial a simple matter.

Like buying an insurance policy for the f

You're insured also on the matter of wall and desk installations with this Leich 900 magneto telephone. For this one telephone, just as it is, can be used for wall or desk installations.

How can you go wrong on such an investment? Even if you never did convert your exchange to common battery, this Leich 900 is the smartest investment you can make. More compact, more attractive than you ever expected a magneto telephone could be, it is built to gives the long trouble-free service for which all Leich telephones are famous. The sensible location of the generator crank makes it easier to operate — with *either* hand.

Truly, here is a magneto telephone that was designed to give you more for your money. In every way. If you don't have our catalog on the Leich 900 magneto telephone, write today. Leich Sales Corporation, 427 West Randolph Street, Chicago 6, Illinois.

1 THE SAME TELEPHONE IS USED FOR WALL OR DESK MODEL. If your subscriber wants a wall telephone you mount this Leich magneto handset on the wall. If he prefers a desk model, just set it down. That's all there's to it. It's not necessary to change or add or subtract a single thing. Here you actually have two telephones in one. This one telephone is the right one for every installation. Saves time, money, space . . . and headaches.

2 REMOVE THE GENERATOR AND YOU HAVE A COMMON BATTERY TELEPHONE. This Leich magneto telephone can be changed over to common battery operation in about five minutes. This can be done at the subscriber's premises. First - remove the generator. Four screws, three spade connectors. Next, change a few wires which changes the circuit to common battery operation. No soldering. Then remove the generator face plate. Two screws. Add a dial blank, two screws, and you have the equivalent of a Leich No. 600 common battery telephone.

LEICH

he future

CH

MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

" . . . Telephone companies must try new methods of promoting good will and making the public more telephone conscious."—(Photos, courtesy of Indiana Bell Tel. Co. and Lincoln (Neb.) T. & T. Co.)

Financing The Small Company

By C. C. Pearce

Mgr., Farmers Tel. Co.
Riceville, Ia.

THE INDEPENDENT telephone industry is today divided into two segments. There is that segment which operates large groups of exchanges. In each exchange operated by such groups is a manager. If it is a large exchange the local manager may have a complete staff of specialists; plant superintendent, wire chief, chief accountant etc., each having other employees responsible to him, and the head of each department in turn responsible to a general manager whom he may only occasionally see as he perhaps has an office in a large city many miles away. But through the use of the mail and the telephone he is able to dictate the general policy to be carried out by the local manager. This general manager is responsible to the board of directors and they in turn to the stockholders.

This, with variations, is the makeup of the large operating groups. In such an organization no individual has complete authority to give a definite answer unless it is in the rule book, and oftentimes many individuals must be consulted before a conclusion is reached. It may be many weeks before a conclusion is reached. It may be many weeks before an answer is available and when it is available it will probably be passed on to the customer by an individual who has had nothing whatever to do with the decision.

Under such a system, employees are protected by the size of the company. When such a company sees fit to increase its rates, an irate subscriber cannot point his finger at an individual in the local office and say, "you are responsible." Personally, I envy and admire the advantages of such a system, and there are many excellent large companies who have built a marvelous business with excellent service, and the finest of public relations under such a system.

Not all companies are fortunate enough to have such a structure back of them, and as there are thousands of companies in the United States consisting of one, two or several small exchanges where the chances are pretty good that each employee is known personally to nearly every subscriber in the exchange.

The latter is the kind of company which I operate, where the individuals are the company. In assuming the management of our small company in the year 1940, had I realized the many perils to be faced, it is doubtful whether I would today be connected with this great industry. Looking back down the steep hill I wonder how we ever made the grade.

The office was located in the upstairs of an old building. A two position magneto switchboard had been installed the year I was born, 1909. The cable plant had been constructed at the same period, most of it located at the top of 35-foot poles. Electricity had reached the community since and the electric wires were a few feet below the cable. The town had long outgrown the capacity of the cable,

as most of it was working on split pairs. In addition to this the company also operated a smaller exchange about ten miles away. The subscribers there were served by a twenty line switchboard somewhat older than the one previously mentioned which was located in a house. This board was operated by Pearle and Gertie who should have been retired when Henry Ford quit making Model T's. The 180 miles of pole line in the two exchanges consisted of grounded circuits, rotted poles and rusty wire. The telephones were all of the old long necked type and some, the real old double box type built for wet batteries. The total gross income in 1940 from these two exchanges was $10,309.00 with an investment of $30,348.00 badly depreciated. The rural and residence rate was $1.25 and the business rate was $2.00. It is not difficult to see that here is where the finance problem began to present itself.

In 1945, the smaller exchange was converted to unattended dial with the plant entirely new, the lines were metallicized, the open plant in town changed to underground tape armored cable, a new building built, dial equipment installed and every subscriber, home and business was equipped with new dial handsets of the latest model. Power line noise had been terrific, and as all lines were changed from grounded to metalic circuits the day the exchange was converted to dial operation, the result was comparable to changing from a yellow flame candle to modern flourescent lighting. This cutover to dial operation was featured in the Riceville weekly paper with headlines and a complete writeup of the history of the old exchange, a story of the new system, and congratulatory ads were run by most of the merchants. It is interesting to note that today with double the old rate, we serve sixty percent more subscribers in this little New Haven dial exchange, and that the toll revenue has not doubled or tripled, but is five times greater than under the old system.

In June, 1947, the town of Riceville was converted to common battery service. A new underground cable system had been installed, most of the rural lines out of the exchange had in the meantime been metallicized, a new building built and equipped entirely new, and all town telephones changed to the latest handsets. Again the local weekly newspaper favored us by devoting nearly one entire issue to the fine improvement in telephone service.

These improvements with all the problems attendant thereto were not brought about overnight, but the trade journals had constantly preached good service and good rates, and these accomplishments were the result of consistent effort to that end.

It would be nothing but boring to give you all the details of these projects, but I will mention a few that may be of special interest and which directly or indirectly affect the finance picture in any company. As you know, it takes money and lots of it to carry on such a program, and in the telephone industry as in every other business, it is the consumer who ultimately pays the bill, therefore, it

(*Please turn to page* 42)

KNOW YOUR WORK | By Richard Allen

DO YOU know your work? You probably think that a foolish question, yet how many of us do know our work, really know it, its relation to other work being done about us, and the part it plays in the general operation of our company?

There are some men who know only enough about their own work to enable them to get by, who apparently don't want to know any more than they have to. These are usually the men who start each morning with two ideas—one, that pay-day is one day nearer; the other, when will quitting time come?

Such men are lucky if they keep their jobs. If you ask one of them why he does not get ahead he will probably tell you he never had a chance, that opportunity never knocked at his door.

He is right—opportunity will never come to him if he continues in his accustomed ways, because he has never even attempted to prepare the way for opportunity to approach him.

Don't forget that we are responsible for the opportunities that come our way or that pass us by.

Again, there are those men who do the work assigned to them, do it conscientiously but without thought or realization of its connection with other work being done around them. Do they know their jobs? Yes, partly, but not with sufficient breadth of vision. They cannot give maximum satisfaction. They are failing to make the best use of their efforts and they are failing to broaden and improve themselves. They do not co-operate as they should. These men probably represent the average, but being average men their progress in the company will in all probability be no better than that of the average man.

Are you content to be classed among the average men, the men who continue to hold average jobs, who continue to draw average pay, and who wait and take the average chance of an opportunity coming along? Or will you be one of those men who ask themselves: "*What is my job —what is its relation to the work of the whole company?*" And who, having questioned themselves, very soon ask others who know, with the result that they get the proper perspective of their work, do it in the most efficient manner and learn something of the jobs of the men a step or two higher up the ladder.

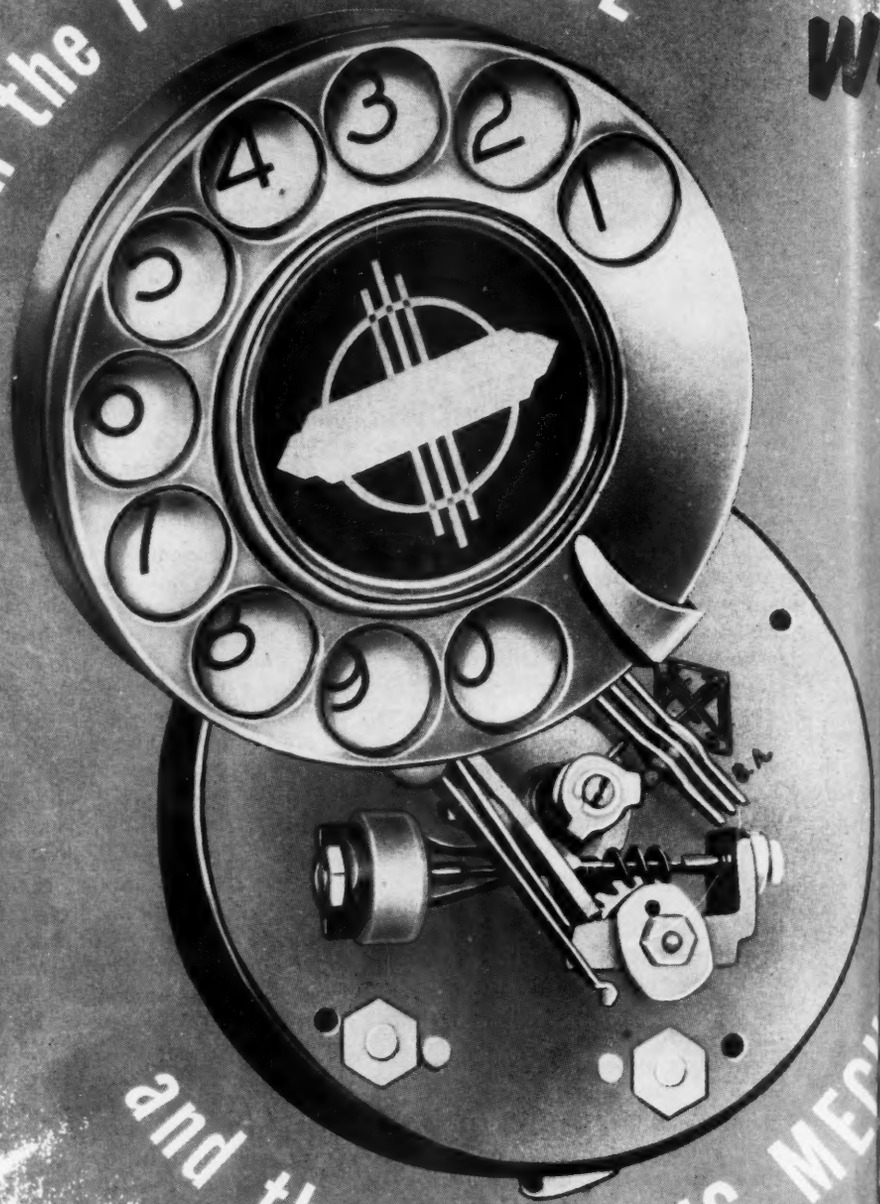
Remember, you cannot fill the shoes of the man ahead unless you learn as much as you can about his job, while doing your own work in a thorough, intelligent manner.

It is not necessary that you be born a genius or develop into a brilliant individual, but if you would succeed you must think intelligently and apply your thoughts and energy to your work; you must learn all you can about the business; you must help others when possible to do so without detriment to your own duties; you must invite responsibility; and especially in the telephone business you must have a ready smile.

We all either go forward or backward—there is no middle ground. Why not know yourself, your work and your company, and then apply the little extra effort needed to distinguish you from the average, and to prepare the way for the opportunity that will surely come to the deserving, for opportunity is not a matter of luck, but is usually of our own making.

LET THE DIAL

with the FRIENDLY FACE



and the ENDURING MEC

*Based on an average of twenty 5-digit calls per day, totaling 33,580,000 pulses.

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Like an old and trusted friend, the Automatic Electric dial wears well and serves faithfully. Just how well it wears has been proved for years in our laboratories, and in actual service. In the most recent tests, eight Automatic Electric dials taken from stock withstood continuous operation, with practically no attention, for the equivalent of 184 years of actual use.*

Compare this performance with any other dial made anywhere. It is typical of the endurance and low maintenance for which the Automatic Electric dial has always been famous. No wonder it's "the dial with the friendly face" to everyone who knows it . . . to plant men for minimum maintenance requirements, to management for lowest over-all costs and to subscribers for its freedom from annoying troubles.

You'll agree when you install Automatic Electric dials that no other dial can approach them for length of life and consistently low maintenance, year after year. So, the next time you order dials, order the Dial with the Friendly Face to win new friends.

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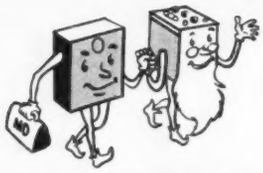
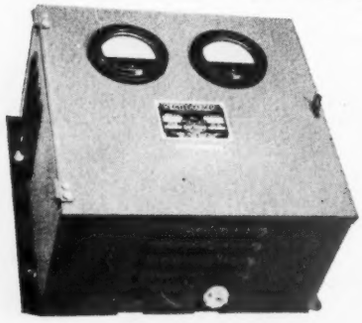


PROLONG BATTERY LIFE

Prevent Over and Under Charging



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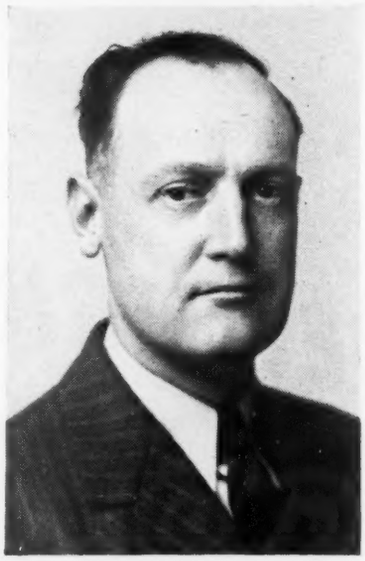
was necessary for us to constantly increase our rates to keep pace with the investment and improved service.

The rates on various classes of service have been increased several times since January 1, 1941 in amounts varying from 25c up to as much as $1.00 at a time until the rural and residence rate is now $2.50 and the business rate $4.00 or just double January 1, 1941 rate. The amount of the investment has increased over $60,000.00 and the gross income has gone from $10,309.00 in 1940 to $26,692.00 for the year ending December 31, 1948. It is interesting to note that income from rental in 1940 was $8,559.00 in 1948, eight years later, it was $21,461.00, an increase of nearly $13,000.00.

Another figure that may interest small companies looking for additional income is the revenue that may be derived from the telephone directory. Our book was formerly published by a party who very generously furnished us with enough books for our subscribers without charge. We now sell our own ads and have the books printed locally. Last year we sold advertising in the amount of over $1,000, while the cost of printing was less than one fourth this amount. If this method is not suitable, I would suggest that you contact one of the several reliable directory companies whose services, I am sure, will fit your own particular needs and will be most profitable to you.

While many improvements were made by reinvesting income, it was necessary in 1945 to borrow $25,000 to finish projects then underway. First, we contacted the local banker and found that they were unable to handle the full amount of the loan because of their small capital structure, but were most willing to enter into a joint loan. The result was, that we worked out a joint loan with the two local banks and with another bank located in our county seat town. The loan was for a ten year term, and with an interest rate of not 6% or 5% or even 4%, but 3½%. Our only expense in obtaining the loan was for services rendered by the local attorney in drawing the note, investigating titles and his opinion which was required by the banking department, a total of a little over $200.00.

A small company in need of capital for improvements would do well to consult with the local bank as it is perhaps one of the best places to obtain money if the amount is not too large and the ammortization period is fairly short, and if they make you a loan you can be assured that the



C. C. PEARCE, manager, Farmers Tel. Co., Riceville, Ia.

officers, directors, and stockholders of that bank are going to be boosters and will help you all they can, and the only report you will need to furnish them will be a copy of your annual income statement and balance sheet. Compare this with obtaining a loan from a government agency, the endless red tape, together with the restrictions on running your business and you will readily see the advantages of dealing with a local financial institution if it is at all possible. Another small company in Northeastern Iowa recently obtained $50.000.00 for improvements from a local bank on very favorable terms.

Loans obtained through the Investment Department of Life Insurance Companies offer another source of finance which has been used extensively and successfully by the telephone industry through the years. Such loans may be obtained for improvements on very favorable terms and with a longer ammortization period than is possible with a local bank, due to certain regulations under which they operate.

To approve such loans, any financial institution must find: That the money is required, that the property value supports the loan, and that the company's business is such that there is a reasonable expectation that the loan can be paid according to its terms.

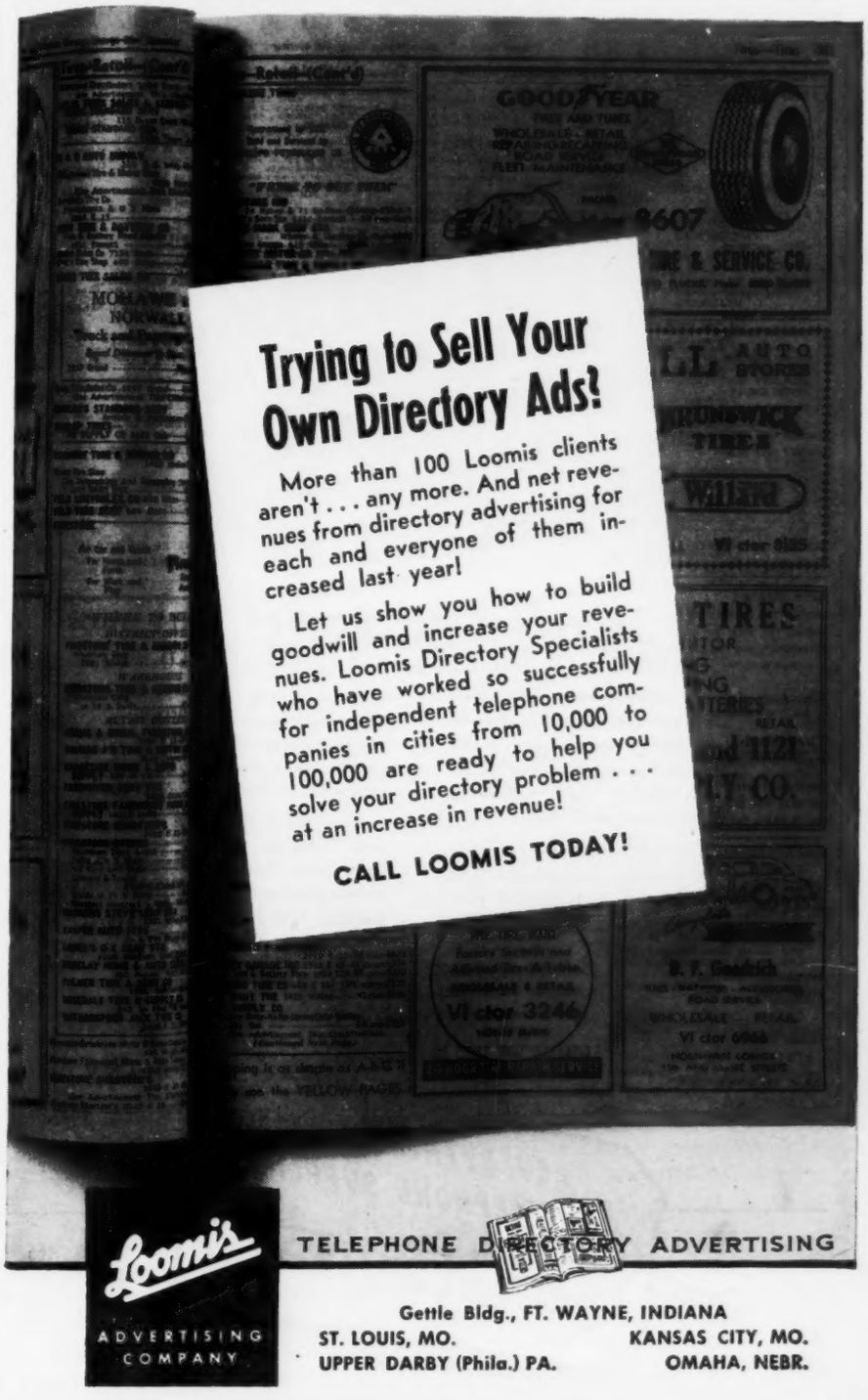
In dealing with a financial institution every phase of past operations of the telephone company is of utmost importance, and not the least is the relationship of your company to the community which it serves. I believe it is of utmost importance to keep our subscribers informed

as to what we are doing and why, and have found that a consistent advertising program carried on through the local weekly newspaper is the nucleus of any public relations program. We find excellent material available through the Telephone Advertising Institute, which provides us with newspaper mats, posters, booth cards, bill enclosures and truck posters, all of which are most timely and attractive. Using this service as a basis, we built around it in many ways. We have made up our own copy for movie trailers, we have given away advertising pencils, pocket calendars, and each year provided the community with small billfold size football schedules. Each year I attend the 4-H Club calf sales at the county fair and always purchase a baby beef at a premium price from some boy or girl living along our rural lines, and for several years we have sponsored one of the four softball teams in our community.

We believe that sometimes telephone companies must try new methods of promoting good will and making the public more "telephone company minded." That is what we had in mind when we arranged a recreation room in the basement of our new building at Riceville. We had realized for some time that there was a definite need in the community for a room in which various groups and organizations could hold meetings, thus the entire basement was planned for this use with a separate entrance so employees would not be disturbed while on duty. It is well lighted and comfortably heated, has a modern rest room and is well equipped, with a kitchen sink built into a bar with a gas plate, has hot and cold water, ventilating fan, coat and hat rack, fifty chairs, and several large tables. This room is available to any group or organization without charge and a total of over forty organizations availed themselves of this service during 1948, including, Boy Scouts, Girl Scouts, American Legion, Legion Auxiliary, Farm Bureau, Triple A., 4-H Clubs, Conservation Club, W. C. T. U., Baseball Club, Athletic Association, Amvets, and Sunday School Classes, with a total of over 150 meetings during the past year. Many families with small homes use it for card parties, dinners and family reunions, including one Thanksgiving dinner, and last but not least, this room has been the scene of eighteen showers for brides, and on one occasion a wedding breakfast and once a month you are able to obtain your drivers license here. I believe this room has been used for every purpose imaginable except weddings or funerals. This is known as the Riceville Rumpus Room and has long since become an institution in the community.

Two years ago in October we planned and sponsored a Corn Show and offered $50.00 in prizes for various classes of corn. The women were not forgotten as we also offered prizes for the best quart of cucumber pickles. The F. F. A. Boys decorated the Rumpus Room in keeping with the season, and what began as a little corn show turned out to be a big community get-together with band concert, political speeches, magicians, a parade, and a dance sponsored by a local club for the benefit of our little community hospital. Those winning prizes for the corn donated the money to the hospital and that evening we auctioned off the prize winning quart of pickles. They were extra good pickles because the quart brought $314.00. This money was also donated to the hospital. The local hospital benefited by a total of nearly $1000.00 and the corn show is now an annual community affair.

We must be up-to-date on ways and means to reach the public. We must watch other industries and adopt methods which they have found to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More than 100 Loomis clients aren't . . . any more. And net revenues from directory advertising for each and everyone of them increased last year!
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Ever since the first telephone line was erected, telephone companies have been finding Graybar* service invaluable in emergencies . . . plenty helpful, too, in meeting everyday requirements. *Graybar Electric Company, Inc. Executive offices: Graybar Building, New York 17, N.Y.* 4806-1

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We have tried to be alert to both direct and indirect methods of building public relations. I believe it pays as we have increased our rates for service many times in the past seven years until they are now double 1940 rates, and at no time have we had an actual complaint.

The following is a practical example of the confidence that can be built up in the minds of subscribers with a consistent public relations program and improved service. In June of 1947 we moved into our new Riceville office and converted the town to common battery service. Figures showed that the rate increase necessary would be 75c on residence service and $1.00 on business. In the last minute rush the July bills went into the mail without any notice of the increase. The bills were all promptly paid and just one subscriber mentioned the increase by remarking when he paid his bill that he noticed it was a little higher.

Oftentimes I think we fail to see the opportunities that present themselves in our own community. In all areas of our nation the income per capita is consistently higher, and statistics show that more money is invested in savings accounts and low interest bearing government bonds than ever before in history. Many people are searching for a more lucrative return on capital accumulated during these recent years of inflated wages and high farm income. Could a company in need of capital find greener fields and what could be a greater asset to a business than good interest bearing stock sold to its own customers?—THE END.

Nebraska Commission OK's Rate Boosts

The Nebraska Central Telephone Co., Gibbon, Neb. was authorized recently by the Nebraska State Railway Commission to increase rates, effective Jan. 1, at its five exchanges.

Rates at the Ansley, Berwyn and Arcadia exchanges will be raised by 50 cents and $1.50 a month, those at Gibbon by 50 cents and $1 a month and from 25 cents to $1.60 a month at Shelton.

The commission also authorized the Comstock Telephone Exchange to increase rates by 50 cents to $1.50 a month.

When certain line repairs have been made the Paxton Telephone Exchange may raise its rate by 40 cents to $2.25 a month.

Make Sure Hammer Is In Good Condition—Avoid Injury

Use hammer only if it is in good condition and with head firmly attached to handle. Make certain both the hammer and your hands are clean. Return hammers with damaged heads, loose or broken handles to the toolroom for repair or replacement.

DON'T use a hammer with a loose, broken or mushroomed head, or with broken, split or greasy handle. Never use a hammer when your hands are greasy.

Concentrate On Object Being Struck—Avoid Injury

Always keep your mind on your work, or you are apt to hit your fingers. Start driving nails by holding them near the head and hitting the nail a light blow. This will minimize the possibility of flying nails and finger injuries.

DON'T try to drive a nail and look elsewhere at the same time. You will cause injury to yourself or to some one else.

Good Housekeepers Establish Safety Records

By Richard Allen

Contributing Editor,
Telephone Engineer Publications

HOUSEKEEPING is one of the most important factors in accident prevention. Men trip over loose objects on floors, stairs, and platforms; they are hit by articles falling from overhead; they slip on greasy, wet, or dirty floors; they run against projecting, poorly-piled or placed materials; improperly piled or supported materials fall on them; they step on or tear their hands on projecting nails.

Housekeeping is more than cleanliness. It is cleanliness and order. A place is in order when there are no unnecessary things about and those that are necessary are in their proper places. If the building is clean, floors free from grease, etc., light bulbs in place and working and windows clean, walls, etc., kept well painted, machinery and equipment kept neat and in order, and if the aisles are properly marked and operations are carried on in an orderly manner, we have good housekeeping and good order. Incidentally, where we find these conditions, we find competent management and a low accident rate as well, for *good housekeeping* and *orderliness* are *fundamentals of good management.*

GOOD HOUSEKEEPING cannot be attained by an occasional grand clean-up and setting-in-order. It must be planned for and continuously pushed. When one undertakes to secure improvement in housekeeping, the first thing to obtain is a thorough clean-up; but unless the management accepts the idea of getting at least a reasonable degree of order and system into all operations, conditions will soon again be as bad as before. Lasting improvement will result only if, in addition to a clean-up, management will adopt a policy of searching out and correcting the conditions that produce the dirt and disorder, and will undertake to plan all operations systematically.

Bad housekeeping is a major cause of fires, for a very large proportion of plant fires start in rubbish or in oil-soaked clothes, or are made more serious by the presence of unnecessary inflamable or readily combustible materials on which to feed.

While every employee should wish to do his part toward keeping his workplace clean and orderly, it is primarily a duty of management. Management must so plan that all

operations will be orderly; provide storage places for materials, racks or holders for tools and portable equipment or containers for materials, and in general see that each day housekeeping and order are maintained as fundamentals of all that is done. Finally, management must train each employee to do his part, for a single bad housekeeper leaves much disorder in his path, but also sets an example disruptive of the morale of all.

The more important details of good housekeeping and order are:

(A) *Handling, storage, and placing of materials, articles, and supplies*—Satisfactory control requires careful consideration of all factors of volume of materials to be handled, the amounts required, allowance of the spaces necessary, and the methods to be used in handling and transporting materials and articles.

(B) *Methods of piling materials and articles*—These must be worked out for each class of material or article. Important points are

(1) *Height of pile*—Dependent upon character of material and consequent danger of toppling, the means used in piling and removal, the traffic nearby and interference with sprinkler operation.

(2) *Strength of support*—Allowable floor loads should be posted.

(3) *Evenness of support and its continued stability*—These factors apply particularly to yard piling where uneven ground, nonhomogeneous ground or moisture may cause toppling, and on first floors or in basements where floors may slope or flooring sag.

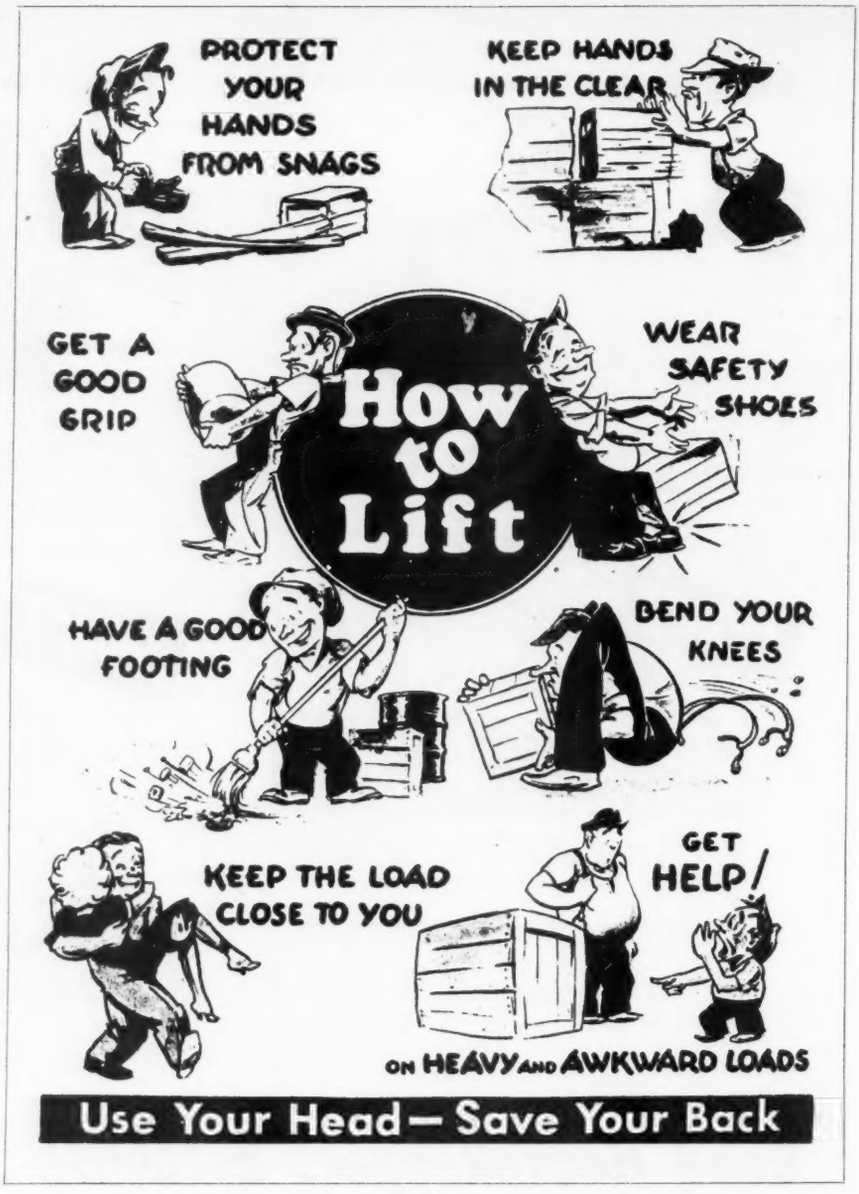
(4) *Location*—Aisle traffic or the presence of work benches or machines may make it necessary to limit the height or character of materials to be piled in otherwise desirable space.

(5) *Piling small articles*—Containers suited to the nature of the articles are commonly used.

(6) *Pipe or other long stock*—Suitable racks aid handling; projecting ends should be protected by location, railings, or barriers.

(7) *Mechanical aids*—The use of "strong-arm" methods instead of some form of stacker, piler, hoist, or carrier is a fault commonly found. Progressive management is continuously seeking better methods of piling and incidental handling.

(C) *Tool housekeeping*—Racks and holders suited to the size and shape of the articles, should be provided for all hand tools, jigs, and such fixtures as chucks, cutters, blades, etc. Frequency of use, value of article, possibility of damage, and the system of maintenance used will determine the location of such racks. Obviously, tools frequently used at a bench or machine should be provided with racks or holders on the bench or at the machine.


PROTECT YOUR HANDS FROM SNAGS
KEEP HANDS IN THE CLEAR
GET A GOOD GRIP
How to Lift
WEAR SAFETY SHOES
HAVE A GOOD FOOTING
BEND YOUR KNEES
KEEP THE LOAD CLOSE TO YOU
GET HELP!
ON HEAVY AND AWKWARD LOADS
Use Your Head—Save Your Back

(D) *Disposal of scrap and waste*—The old way is to let the floor catch the waste and then clean it up from time to time. Competent management, however, estimates probable waste in advance and provides suitable means of collecting it as it is produced and disposing of it in the most economical and orderly way possible. An intelligent interest in keeping waste and scrap down helps both safety and profits.

(E) *Marking of storage space*—Clear marking of aisles and of spaces reserved for storage with prohibition of piling or placing materials or articles in aisle space.

(F) *Leaks, drips, and spillage*—Oil pans, splash guards and drip pans can be used to keep oil off floor. Proper means of oiling and good maintenance reduce dripping. Means of handling liquids should take spillage into account. Good construction reduces leaks.

(G) *Width and layout of aisles*—No specific rule can be laid down, though it is well to point out that aisles too narrow for safety are also too narrow for efficiency. Too-narrow aisles is a very common fault.

(H) *Layout of machinery and equipment*—This is, of course, a function of management rather than of housekeeping as such, yet the provision of adequate space and the proper arrangement of the various equipment units are so vital to housekeeping and order that they must be mentioned here. A common mistake of management is to add equipment to already well filled floor space thereby not only increasing the accident hazard but often decreasing

KEEP CUTTING EDGES SHARP
SKINNED KNUCKLES-STRAINED MUSCLES-BRUISED ARMS-BATTERED LEGS AND A HOST OF OTHER INJURIES COME FROM TRYING TO USE DULL TOOLS

the efficiency of the whole room due to overcrowding.

Projecting nails present a serious hazard. Nails left projecting when kegs, barrels, or boxes are opened constitute definite invitations to injury. When kegs or barrels are opened, the nails should either be drawn or bent over and the points hammered into the wood with hammer and metal block. They should be drawn from boxes or driven home. Nails should be drawn from boards and planks, for if the lumber is ever used again they will have to be pulled out. Nails left in planks often ruin saws and may cause serious accidents. Even if boards removed from boxes, crates, forms, etc., are to be burned, it is better to draw the nails in order to avoid nail wounds in the handling.

When service demands increase, there is a constant temptation to relax such housekeeping rules as those covering the piling of materials and articles. Sometimes there may be no alternative, but usually other means of relief can be found. If the management authorizes the relaxing of any such rules, the return of the proper condition should be required at the earliest possible moment.—THE END.

"Revised Gettysburg Address"

ONE-SCORE and 16 years ago our fathers brought forth upon this nation a new tax, conceived in desperation and dedicated to the proposition that all men are fair game.

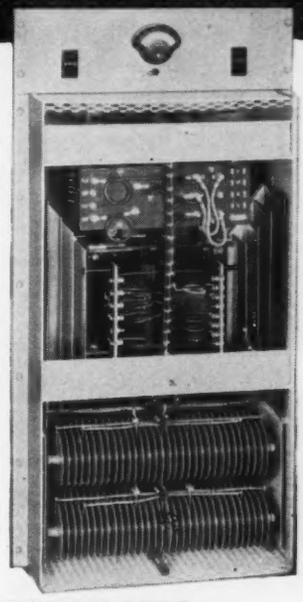
Now we are engaged in a great mass of calculations testing whether that taxpayer or any taxpayer so confused and so impoverished can long endure. We are met on Form 1040. We have come to dedicate a large portion of our income to a final resting place with those men who here spend their lives that they may spend our money.

It is altogether anguish and torture that we should do this. But in the legal sense we cannot evade—we cannot cheat—we cannot underestimate this tax. The collectors, clever and sly, who computed here, have gone far beyond our power to add and subtract.

Our creditors will little note nor long remember what we pay here, but the Bureau of Internal Revenue can never forget what we report here: It is for us taxpayers rather to be devoted here to the tax return which the government has thus far so nobly spent. It is rather for us to be dedicated to the great task remaining before us—that from these vanished dollars we take increased devotion to the few remaining; that we here highly resolve that next year will not find us in a higher income tax bracket.

That this taxpayer: underpaid, shall figure out more deductions; and that taxation of the people by the Congress, for the government shall not cause our solvency to perish.—*The above article was printed in the Shelby (South Dakota) RECORD, from which it was clipped by the Ripley (Ohio) BEE, then reprinted in Joseph Garretson's column in the CINCINNATI ENQUIRER.*

FLOTROL
THE *All-New*
BATTERY CHARGER



IT REGULATES
IT COMPENSATES

Holds Battery Voltage Constant Within ±1% With No Moving Parts and Without Using Tubes, Motors, Relays, D. C. Stabilizers or D. C. Controlled Reactors.

Assures Continuous and Substantial Power Savings By Low Stand-By Losses Combined With Higher Overall Efficiency. For Details and Prices See Your Local Distributor.

ORDER BY MODEL NUMBER

FLOTROL CONSTANT VOLTAGE CHARGERS

MODEL	60 C. INPUT	RATING
24A	1Ø	1.0 amp. 24V.
75A	1Ø	3.0 amp. 24V.
150A	1Ø	6.0 amp. 24V.
300A	1Ø	12.0 amp. 24V.
600A	1Ø	24.0 amp. 24V.
1250A	3Ø	50.0 amp. 24V.
2500A	3Ø	100.0 amp. 24V.
*150D	1Ø	6 amp. 24V.
		3 amp. 50V.
*300D	1Ø	12 amp. 24V.
		6 amp. 50V.
75B	1Ø	1.5 amp. 50V.
150B	1Ø	3 amp. 50V.
300B	1Ø	6 amp. 50V.
600B	1Ø	12 amp. 50V.
1200B	1Ø	24 amp. 50V.
1250B	3Ø	25 amp. 50V.
2500B	3Ø	50 amp. 50V.
3750B	3Ø	75 amp. 50V.
5000B	3Ø	100 amp. 50V.
10KB	3Ø	200 amp. 50V.

*Dual Range Chargers

LORAIN PRODUCTS CORPORATION
DEPT. L, 1122 F ST., LORAIN, O.

FLOTROL
PARTNERS IN DEPENDABILITY
SUB-CYCLE

Ohio Bell worker illustrates how trucks are checked and loaded at night in the warehouse. Such procedure keeps every truck well stocked and eliminates delays caused by unavailable items.

Underinflation of tires causes them to wear rapidly and the tire may go to pieces on the inside. The inspector above has let the air out of a truck tire to show how this made the side of the tire bulge out.

"How To Do It" Suggestions

Watch Your Tires!

TO PREVENT premature wear of tires on construction or maintenance trucks, heavy duty tires should always be used, especially on the rear wheels, particularly if any heavy lifting with truck mounted pole derrick is done. Tires of six-ply construction are far better than four-ply tires for this kind of service. Dual rear tires are best for heavy construction trucks. Tires should be replaced when they approach the end of their service life—not when they actually wear out—for the reason that a tire that fails in service may idle an entire crew of men with unnecessary expense to the telephone company. It is cheaper in the long run to replace truck tires before they wear out, when the crew is out on the road or working in the country.

Caring For Leather Items

By John G. Reynolds

Managing Editor,
Telephone Engineer Publications

DURING the winter months when construction activity is at a standstill and linemen use hook and belt only when called out on maintenance purposes there is a tendency to negiect the care of leather items such as climber straps, pads, body belts, safety straps, etc. These items can be kept in prime condition by the following procedure, which is recommended by a leading tool manufacturer.

(1)—Inspect all leather items for cuts, cracks, or enlarged eye holes which would indicate that the unit should be replaced.

(2)—Check for breaks, cracks or loose rivets in buckles, rings, safety hooks, etc.

(3)—Clean leather by wiping off surface dirt with a damp sponge.

(4)—Using a soft rag or sponge and a neutral soap remove embedded dirt and perspiration from the leather with thick creamy lather and wipe with a dry cloth.

(5)—Using a good grade of saddle soap massage the leather goods thoroughly and wipe with a dry cloth.

(6)—Before the leather has dried apply a leather dressing and work it thoroughly into the leather with the hands. After the leather goods has dried for a day or so carefully wipe off any excess dressing.

This procedure repeated at intervals of 30 to 60 days will keep leather tools in top condition.

Alarm System Speeds Cable Maintenance

THE LONG LINES Department of the American Telephone and Telegraph Company is now keeping tabs on the lonely stretches along the 650 mile Dallas-El Paso coaxial cable with the aid of an ingenious time saving signal unit called the B-1 alarm and control system. Maintenance men at a central control point located in Dallas can detect trouble on the cable and even effect emergency adjustments at trouble spots by dialing orders to the new device.

The system is designed to help

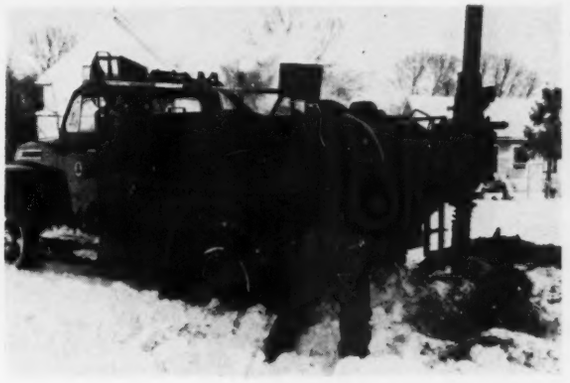
*The Alaska Frost Earth Auger**

IS MADE IN THE NORTH—TO SOLVE YOUR FROST PROBLEM

DRILLS THROUGH FLINT, HARD FROZEN EARTH, SHALE, SANDSTONE, CLAY, GUMBO, GRAVEL, AND DRY HARD PACKS

The auger in operation at
11° below zero—3 feet frozen gumbo

* Pat. Pending



YOU MAY TRY IT ON YOUR OWN MACHINE WITHOUT OBLIGATION

PRICE SHEETS AND CIRCULAR ON REQUEST

Manufacturers and Distributors

HENNING ELECTRIC MOTOR CO.
P. O. BOX 786
FARGO, NORTH DAKOTA

Nicopress Sleeves

Make Better Special-Purpose Splices

Nicopress sleeves are available in 13 different combinations for electrical and mechanical splices including sleeves for spinning wire, dead end wire and other special applications. It's easy to make Nicopress special-purpose splices. Simply insert each end of wire in Nicopress sleeve and compress with handy Nicopress tool. You get a permanent tight splice that requires no further attention. Use Nicopress sleeves for all splices.

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AUTOMATIC ELECTRIC

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
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1033 West Van Buren Street, Chicago 7, U. S. A.

WHAT—

Nylon CORDS?

Yes—and they're

1 **TOUGH**
Nylon thread used for the covering of these cords provides a superior tough outer braid capable of hard service.

2 **DURABLE**
Switchboard cords are subject to severe wear. Nylon covering gives long and exceptionally satisfactory service under hard usage.

3 **WATER-PROOF**
Chemists recognize Nylon as a material highly resistant to moisture and acids.

4 **MILDEW-PROOF**
Where mildew is likely to occur these Nylon cords are immune to its destructive action.

5 **RUGGED**
The unusual tensile strength of Nylon provides a ruggedness far beyond other types of cords.

6 **BEAUTIFUL**
The very name Nylon suggests beauty, quality and refinement. These cords live up to the name in every respect.

ASK FOR

Runzel V.N. SERIES *Nylon*

SWITCHBOARD **CORDS**

RUNZEL
Cord and Wire Co.
4723 W. MONTROSE AVE.
CHICAGO 41, ILL.

watch over a maximum of ten main repeater stations. Because the device is expected to be especially convenient in helping safeguard service along coaxial routes where fully staffed offices are separated by great distances, the Dallas-El Paso line was chosen for the initial installation. Between these two cities there are five offices maintained only on a visiting or inspection basis.

As an alarm system, the equipment is capable of indicating 160 trouble conditions and can often forewarn of coming difficulties. It reports blown fuses, improper functioning of the power machinery for charging batteries, cable failures, commercial or emergency power difficulties, and other attendant hazards, such as a dangerously low gasoline supply for the emergency generator.

In the event of an alarm condition in one of these offices, the system transmits a signal to the control center at Dallas, which is received there on a strip of lights as either a major or minor alarm, depending on the type or importance of the condition. The Dallas attendant can speedily determine the exact nature of the trouble by dialing an order back to the distant office, which starts a special indicator circuit operating. This circuit scans every alarm lead there. Any alarm conditions discovered are transmitted to Dallas and registered as lights on an indicator receiving lamp panel.

By placing a translucent indicator record form over the panel and checking each square that has a lamp lighted, the Dallas attendant can at once obtain a detailed picture of all alarms received, including the station identification. With this marked form, those at the control office learn the nature of the difficulty reported and can judge what action to take to clear the trouble at the distant office temporarily or permanently. While some cases require that a man be sent to the spot for repair work, many conditions can actually be cleared up remotely by dialing further orders to the new equipment.

Pavement Breaker For Opening Pavement

WHERE THERE is a considerable amount of cable laying work to be done under existing pavement, the pavement breaking machine shown in *Figure* 1 is capable of performing the work of cutting the pavement layer for the trenching operation. It is actually a powerful compressed air hammer mounted on a four-wheel light chassis, which is

Fig. 1—The Mighty Midget pavement breaker at work.

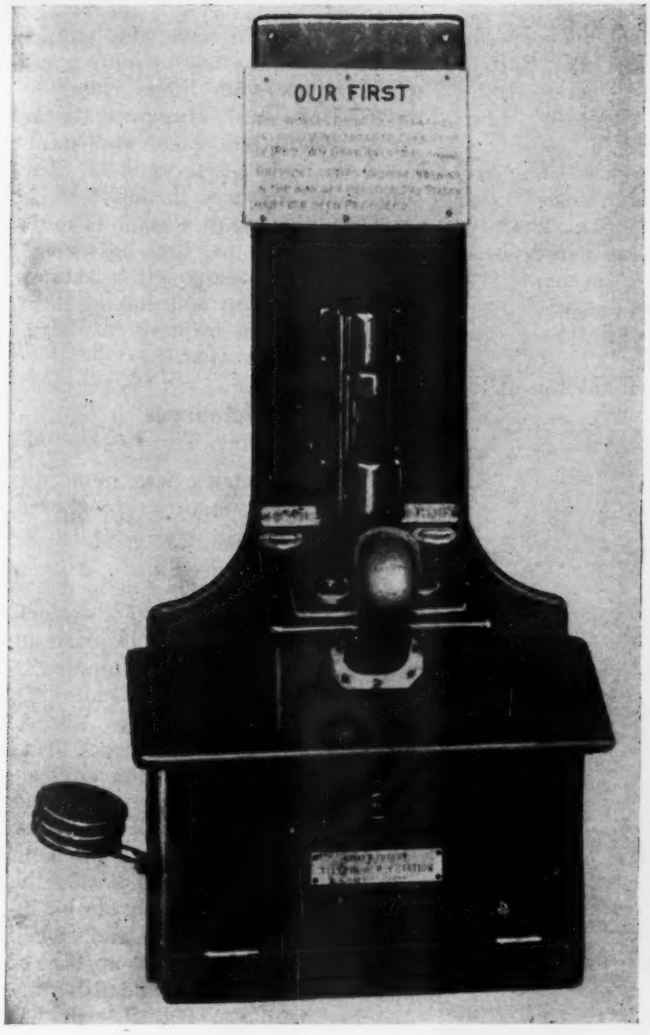
propelled at a controllable speed by a compressed air motor. The speed is controlled by a throttle and forward and reverse direction of motion are obtained by means of a two-position lever. An automotive type of steering wheel is used to guide the machine on its course. A worm drive tends to keep the front wheels steady under difficult conditions and the high wheels enable the machine to hold a straight course through broken concrete.

The hammer action can be controlled by hand or foot. The working stroke is 29 inches and the working speed is 55 blows per minute.

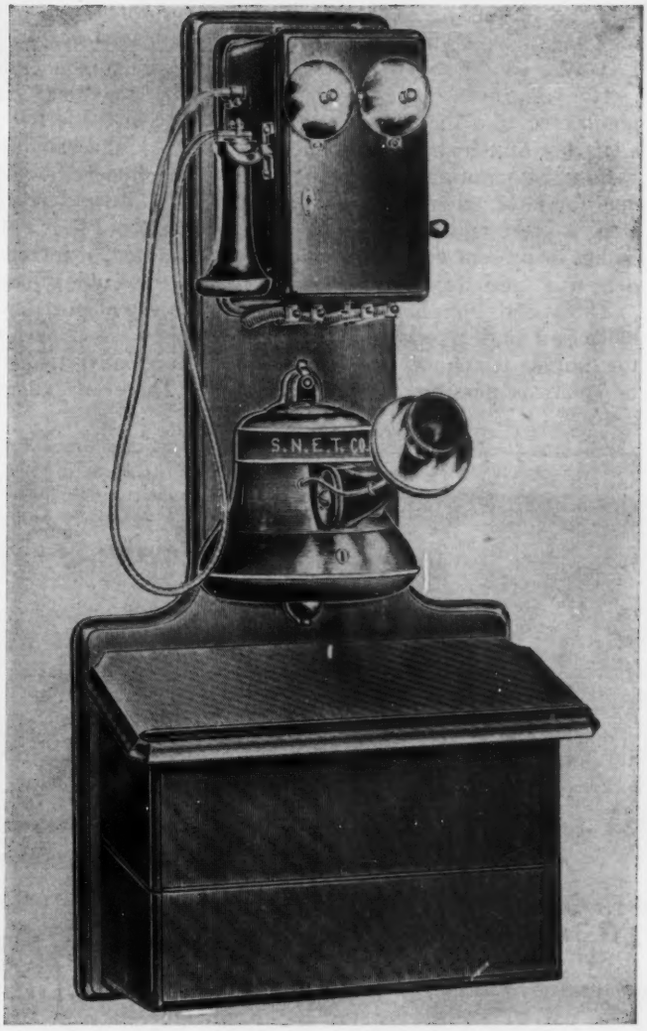
Because of the slow steady movement of the machine, each cutting blow overlaps, resulting in a fine even line of cut, which is not obtainable with ordinary pneumatic tools. The air cylinder is adjustable up and down within 30 inches with 6 positions available.

It is claimed that this type of machine can easily break up high quality reinforced concrete up to 9 inches thick. It is said that one operator can perform five times the work formerly done by hand methods. This machine operates from a 105 C.F.M. (cubic foot per minute) air compressor, though the manufacturer recommends a 160 C.F.M. compressor for maximum efficiency.

Several types of tools are available for use with this machine, each adapted to concrete breaking, concrete scoring, asphalt scoring, asphalt edging, general demolition of large areas of concrete, and tamping of backfill after trenching and laying is completed.



This early instrument had not only an elbow rest but slots for half-dollars and "cartwheel" silver dollars as well as for the usual smaller coins.



A later model, with coin slot in the big bell, above the initials of the Southern New England Telephone Company, collected the coins in the early days.

Reducing The Telephone Slug Problem

By H. Montague Pope

Commercial Problems Engineer,
American Tel. & Tel. Co.

IT WAS in the year 1889 that the first public coin telephone was installed, in Hartford, Connecticut, on the ground floor of the old Hartford Bank, at the corner of Main and Central Row. Other public coin telephones soon were installed in Connecticut, and were gradually introduced in other sections of the country.

The telephone industry in those early days was a fast-growing one—as, in fact, it still is—and with the installation of the ever increasing number of telephones in homes and business concerns, the need for public telephones became increasingly important. Compared with that first public coin telephone, installed in 1889, there are now in service in this country nearly 720,000 Bell System public and semi-public multi-slot coin telephones, and more than 3,000 attended public telephones. In addition, Independent telephone companies have about 75,000 public telephones in service. In 1947, public telephones produced approximately $200,000,000 in revenue.

Coin telephones have tempted some people to beat the telephone companies out of legitimate charges for the services they furnish, through the use of slugs in lieu of United States nickels, dimes, and quarters. Over the years, the use of slugs had become increasingly prevalent, until Bell System losses reached a peak in 1933.

It was a serious problem for the telephone companies, for it was apparent that losses would continue to increase unless decisive efforts were made to combat the fraudulent use of slugs. The situation was canvassed, and consideration was given to such steps as designing new coin telephones, modifying existing coin telephones, attacking the sources of slugs, seeking the enactment of State

laws or the strengthening of existing laws, and invoking existing Federal laws.

The improvement of coin telephones is, like the improvement of all items of telephone equipment, a matter of continuing study. The decision was, therefore, as a first step, to alter and refine the arrangements in present coin telephones for detecting and rejecting slugs.

The metal box housing the coin collection and rejection features of the public telephone has been kept as small as possible, and there are, therefore, some limitations as to what modifications can be made in the existing telephones. Bell System coin telephones have been made by Western Electric Company since 1934, and engineers of American Telephone and Telegraph Company, Bell Telephone Laboratories, and Western Electric Company have cooperated in introducing new features in the coin rejecting mechanism to the extent possible in the space available. These new features have been principally two.

The coin gauges at the top of the coin box were formerly of nickel-plated brass, while the new gauges are of steel and made to more exact specifications, with limits closer to the sizes of coins. This prevents the use of over-sized slugs, and minimizes the wear on the gauges. The coin-chute runways through which the coins pass are now made to more rigid specifications, thus increasing the efficiency of the rejecting features of the mechanisms and making them less subject than formerly to deformation through wear.

Drying Up the Sources Of Slugs

A different attack was upon the supply of slugs that could be used instead of 5c, 10c and 25c United States coins.

One of the first steps was to determine the sources of slugs and to take such action as seemed appropriate to reduce the supply to a minimum.

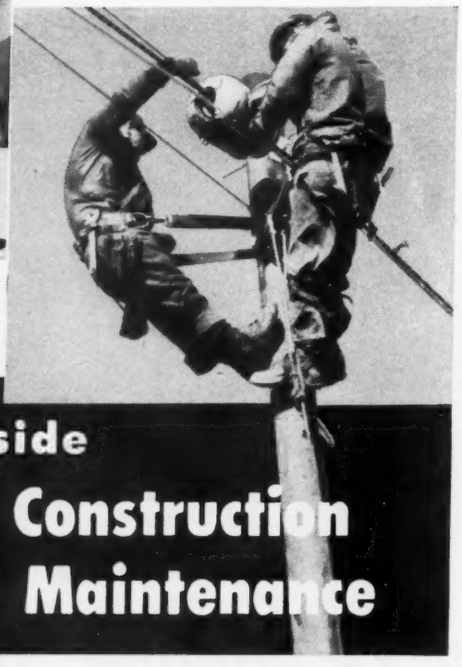
Many manufacturers of marking devices made trade checks, tokens, key tags, and similar innocent items in sizes approximating the sizes of nickels, dimes, and quarters; and many of them soon found their way, through fraudulent use, into coin telephones. In the early 1930s the national trade association of the industry was approached and, when informed of the fraudulent use of members' products, heartily cooperated with the Bell System. At an annual meeting of members, the group unanimously agreed not to make such products in sizes susceptible of misuse.

Not long thereafter, certain members were requested to quote prices on coin-size slugs in orders as large as one ton lots. To their great credit, these members replied that no member of their association would be a party to business of such a questionable nature.

Another problem arose when legitimate manufacturers found it necessary, in the course of making their products, to create waste punchings of metal which sometimes were off coin sizes. In some instances these punchings found their way into coin telephones. The managements of these factories, when informed of what was happening, immediately took steps to keep the punchings from leaving the factories. Occasionally it was difficult to determine the source of the punchings, but vigilance on the part of telephone employees usually resulted in its discovery and elimination.

There have been many instances of business concerns distributing advertising discs of coin size—some of

... From Pencil Line



To High Line ...

Complete Outside
Engineering, Construction and Maintenance

Neale can help you plan, erect, repair or maintain your outside telephone plant.

Our engineers have the background . . . and practical experience . . . necessary to design economical, long-lasting systems. Their familiarity with the latest methods and engineering developments will help you keep plant investment low and maintenance costs down.

Highly trained Neale crews with years of on-the-job experience working with independent telephone companies from coast-to-coast assure you that plans will be executed faithfully, quickly, and economically.

So, whether you're planning . . . building . . . or maintaining outside telephone plant—why not put this experience to work for you? Call us today. Let us give you time and cost estimates on construction, maintenance or repair jobs.

Phone NEALE TODAY!

NEALE CONSTRUCTION CO.
ENGINEERING • CONSTRUCTION • MAINTENANCE
TOPEKA, KANSAS PHONE 4-2621

which have subsequently been found in coin telephones. Manufacturers and distributors were interviewed, and when informed that the slugs were being used fraudulently, agreed to destroy their supply of such discs and cancel pending orders for additional slugs. One interesting case was a religious organization which distributed 25-cent-size discs having a brief prayer on each side. When informed of the misuse of these "prayer slugs," the organization immediately canceled all orders for additional discs.

Because of the cooperation of legitimate manufacturers, slugs eventually became scarce. This apparently suggested a lucrative field to certain individuals and concerns, who thereupon went into the slug manufacturing business in a big way. Some of them had in their factories various types of coin-operated merchandising machines, including coin telephones, presumably to enable them to design slugs which these machines could not reject. An idea of the character of these concerns may be obtained from the following excerpt from an advertisement of one of them:

"We are the leading supply house for slot machine slugs. These are sold for use only in gambling devices. . . . They work just like real money, oftentimes better. When money has become worn it sometimes will fail to work the machine. Our slugs never fail. . . . These slugs are not sold to be used in telephones or other legal machines."

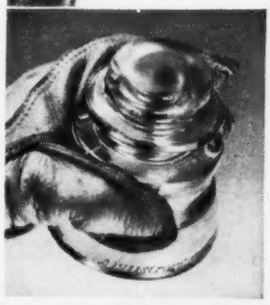
The last sentence of the quotation was in large print, and in effect actually informed people that the slugs could be used to operate telephones or other legal machines.

There was in 1933, due probably to general economic conditions, a definite increase in slug usage not only in telephones but in coin-operated merchandising machines, postage stamp machines, railway turnstiles, automats, and similar devices; and the operators of coin collecting devices were determined to combat this fraudulent use.

The Bell telephone companies intensified their efforts to reduce the use of slugs. Analyses were made to determine periodically the extent of use at each coin telephone, and slugs were classified by types. As new types of slug showed up, their source was usually discovered—although that was often not easy to find.

Where the use of slugs in a given coin telephone was heavy, the agent on whose premises it was located was

Dependable in any weather



Armstrong's No. 1

Cold snaps or sudden thaws have no effect on Armstrong's Glass Insulators. Whatever the weather, these insulators give dependable service because they are factory tested to resist thermal shocks far more severe than any that are encountered in actual service on your lines.

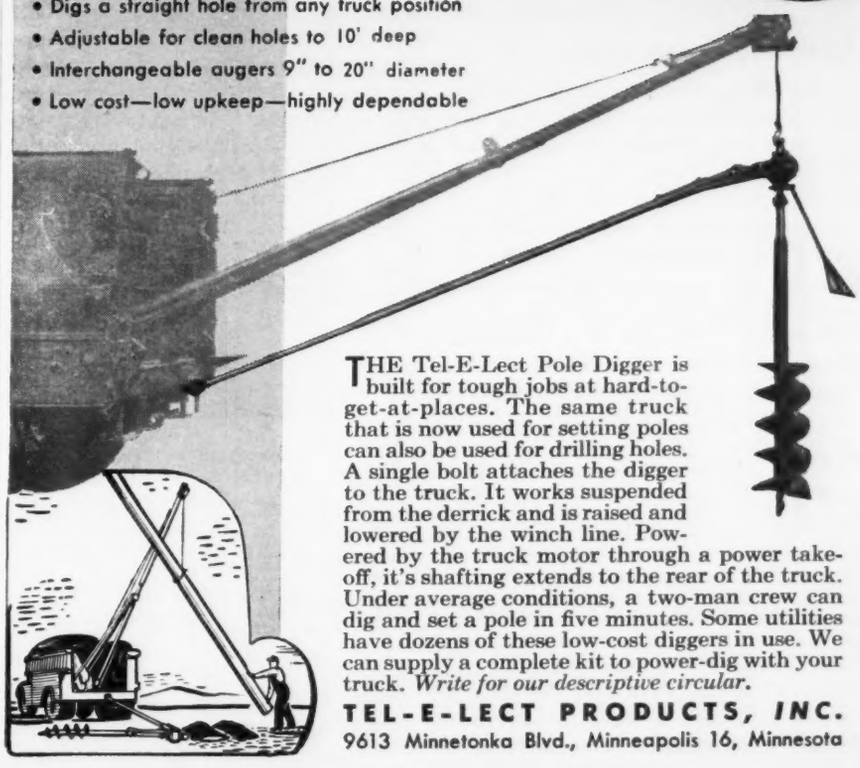
Armstrong's Glass Insulators are specially formulated to resist weathering. Made of highly inert glass, they withstand the elements for years without any sign of deterioration.

Your distributor can give you further information about dependable, low-cost Armstrong's Glass Insulators. Call him today. Or write Armstrong Cork Company, Industrial Division, Millville, N. J. Available for export.

ARMSTRONG'S GLASS INSULATORS
for communications . . . for power

DIG HOLES WITH YOUR LINE TRUCK AND CREW
TEL-E-LECT POLE HOLE DIGGER

- Digs a straight hole from any truck position
- Adjustable for clean holes to 10' deep
- Interchangeable augers 9" to 20" diameter
- Low cost—low upkeep—highly dependable



THE Tel-E-Lect Pole Digger is built for tough jobs at hard-to-get-at-places. The same truck that is now used for setting poles can also be used for drilling holes. A single bolt attaches the digger to the truck. It works suspended from the derrick and is raised and lowered by the winch line. Powered by the truck motor through a power take-off, it's shafting extends to the rear of the truck. Under average conditions, a two-man crew can dig and set a pole in five minutes. Some utilities have dozens of these low-cost diggers in use. We can supply a complete kit to power-dig with your truck. *Write for our descriptive circular.*

TEL-E-LECT PRODUCTS, INC.
9613 Minnetonka Blvd., Minneapolis 16, Minnesota

interviewed and the situation was explained to him—including the effect of such fraudulent use in reducing his commissions. The agents cooperated with the telephone companies on the side of law and order, and sometimes were able to point out probable suspects. Their assistance resulted in a number of arrests by city police, followed by convictions in the courts, and the newspaper accounts of the convictions unquestionably contributed to the reduction of slug usage. In some situations where all efforts failed to reduce the use of slugs, the coin telephones were removed and reestablished in other locations. During the last war, oddly enough, the shortage of metal increased the difficulty of slug makers, and as a consequence contributed to the reduction of slugs.

There is one case on record where the user of slugs in a coin telephone was apprehended through the use of finger-prints. In this instance a long distance call of several hundred miles was made; and immediately after the call the plain brass slugs used were removed by city police and taken to headquarters, where they were photographed and the finger-prints identified. The user of the slugs and his associate were quickly arrested, and were later released after each had put up $1,000 bond. The two men forfeited their $2,000, and their automobile was confiscated by the police, since it contained a sack full of brass slugs similar to those used in making the long distance call. Crime does not pay!

Laws and Law-breakers

By 1933, the majority of states had enacted laws to prohibit the use of slugs and penalize the users; but few statutes prohibited the manufacture, sale, or distribution of slugs.

Soon thereafter, several states enacted laws to prohibit the manufacture, sale, or distribution of slugs with fraudulent intent, or with knowledge or reason to believe that such slugs were for fraudulent use. Except in a few cases, these state laws were not very effective, for the reason that it was too difficult for a district attorney to prove fraudulent intent. The manufacturer or distributor could always proclaim his innocence and deny any attempt to defraud.

While amendments to Minnesota and Ohio statutes were being considered by the state legislatures, a suggestion was made that the amendments should include a provision that "knowledge or reason to believe" may be shown by proof that any law-enforcement officer has, prior to the commission of the offense with which the defendant is charged, informed the defendant that slugs of the kind were being used unlawfully or fraudulently to operate coin collecting devices designed to be operated by lawful coins of the United States. Both states in 1941 had this provision enacted into the law. In addition, the Ohio statute has a provision to prohibit the advertising of slugs for the operation of illegal machines.

In a Federal District Court an indictment was brought against a man on three counts: (1) for possessing 500 falsely made and counterfeited coins in resemblance and similitude of the genuine five-cent coin of the United States, all with intent to defraud; (2) for the unlawful sale of 100 of said coins, with intent to defraud; and (3) for unlawfully issuing 100 tokens and devices of metal and its compounds intended to be used as money for and instead of the five-cent piece authorized by law, all without being lawfully authorized to do so.

The facts in this case, as brought out by the district attorney, briefly are as follows: The defendant operated a novelty store where he sold certain coin slugs to the public, purchasing them at wholesale and selling them at some profit. Two types of slugs were involved, one of them selling for $1.00 a hundred and the other, which the defendant called his DeLuxe type, sold for $1.20 per hundred. Thus for $1.20 one might obtain from the defendant's store slugs which if used for nickels would have a "value" of $5.00. In this case the Government presented a comparative table of the contents of the genuine nickel prescribed by Federal statute and the contents of these slugs:

Genuine Nickel		*Coin Slug*
Copper	75%	Copper 63%
Nickel	25%	Nickel 17.60%
		The remainder consisted of Zinc, Cadmium and Iron.

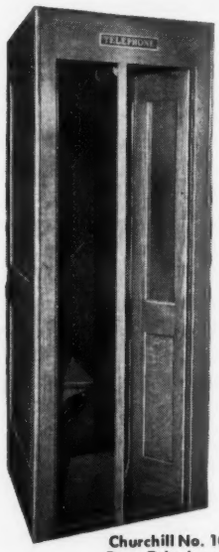
The comparative weight and size of the genuine nickel under the Federal statutes and the coin slugs issued by defendant were as follows:

Genuine Nickel	*Coin Slug*
77.16 grains	76.90 grains

There is a variance of weight allowed by statute of 3 grains, so the coin slugs were within the variance

(*Please turn to page* 56)

STROMB



The Churchill No. 100 Folding Door Telephone Booth

churchill
telephone booth

. . . reduces overhead by increasing revenue

Users appreciate the comfort and quiet privacy afforded by the Churchill No. 100 Folding Door Telephone Booth. Operating companies enjoy increased pay station business.

Constructed as a single unit and equipped with a reinforced back panel for mounting a wall telephone or coin collector. Included as standard equipment are electric light and automatic electric ventilator.

Available in two finishes:

No. 100-A: Selected white oak, in light medium oak satin finish.

No. 100-B: Birch, mahogany finish.

Overall height, 84¾"; width, 30½"; depth, 30½". Shipped knocked down and crated.

Illustrated literature available.

STROMBERG-C

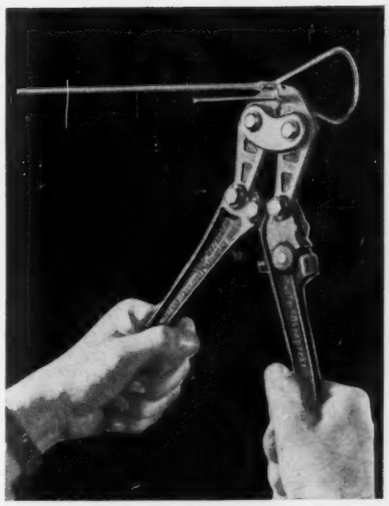
STROMBERG Telephone CARLSON

TELEPHONES, SWITCHBOARDS + SOUN

MBERG-CARLSON recommends...

for better offset dead ends specify

nicopress!



You can't buy better Dead Ends than *Nicopress!*

Designed for use with either copper, Copperweld, or iron wire, *Nicopress* Dead Ends star in strength and tightness.

Installing these Dead Ends is simplicity itself. You need no extra tools—the same tool used in making regular line splices will make the offset dead end as well.

Nicopress Dead Ends make possible a tail of any desired length.

These Nicopress tools are small and compact—can be operated with no trouble at all close to insulators or cross arms.

reversible • weatherproof

reliable "RU" cable terminal

The results of Reliable's policy of endless research and testing of parts and materials, together with a rugged design simplicity are apparent in this Reversible, Unprotected Terminal.

The flat fanning face plate, in combination with a sturdy non-corrosive aluminum cover which surrounds the wires both front and back, creates an unusually weatherproof terminal.

The reversible sliding aluminum cover also permits stub to be mounted at either top or bottom.

Such other features as: detachable mounting bracket; cast cable chamber; guide rings for jumpers; beveled washers; perfect sealing nozzle, etc. add greatly to the installation and service convenience of the Reliable "RU" Terminal, as well as providing an assurance of service life beyond actual field requirements. Ask for complete information on sizes and prices.

"Reliable" identifies the quality

for flattened or rusted studs and bolts

buckingham's rapid thread cleaner

No need to remove a damaged stud . . . no time-consuming backsawing, drilling or re-tapping. Slip this ingenious tool over the mutilated stud, bolt or shaft, tighten the cutting jaws, give a twist or two—and presto! flats smooth out, threads emerge slick and clean.

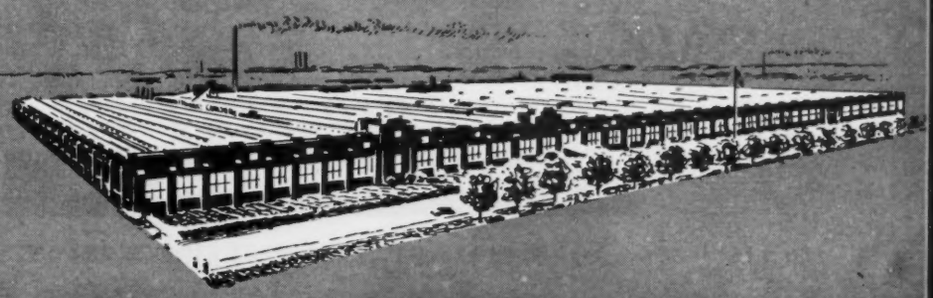
For right or left-hand threads with root diameter from ¼" to 4". Separate cutting dies not needed—the adjustable cutting jaws are set on the bolt and locked there by a nut on the knurled handle. Three sizes:

No. 6103—¼" to 1" root diameter
No. 6104—1" to 2 1/16" root diameter
No. 6106—2" to 4" root diameter

Stromberg-Carlson distributes all the fine equipment of Buckingham Manufacturing Co.

G-CARLSON

Factory, General Offices: Rochester 3, N.Y.
Branch Offices: Atlanta 3, Chicago 6, Kansas City 8, San Francisco 3. In Canada: Stromberg-Carlson Co. Ltd., Toronto



EQUIPMENT AND ELECTRONIC CARILLONS • INDUSTRIAL, INTERCOMMUNICATION SYSTEMS • RADIOS, RADIO-PHONOGRAPHS, FM AND TELEVISION

allowed by law and may be said to be exactly of the same weight as the genuine nickel. The statute does not fix the dimensions, but the standard diameter and thickness of the genuine nickel as compared with the coin slug were as follows:

	Genuine Nickel	*Coin Slug*
Diameter	.835 inch	.833 inch
Thickness	.078 inch	.075 inch

The coin slugs had inscriptions on one side reading "No cash value" and on the other side "Good for amusement only." The slugs in this respect did not resemble the genuine nickel, and obviously were not intended to be passed physically from hand to hand as money. The mode of use in this case was to pass the coin by a mechanical device which cannot be read, and therefore it was immaterial what inscription appeared on the slug. In all other respects the slug so closely resembled the genuine nickel in size, weight, and metal compound that it avoided detection by the mechanical devices used in vending machines and coin telephones.

It was apparent that such slugs were intentionally issued to be used as and in place of genuine five-cent coins. The defendant was found guilty and penalized.

Another case of a concern manufacturing in a big way slugs identical in size with United States coins resulted in the factory being raided by local police in cooperation with Federal authorities. In this factory were found mechanisms of various coin-operated machines, including coin telephones. All slugs were confiscated, and the tools for making them; the makers were subsequently indicted by a Grand Jury, tried in a Federal court, found guilty, and sentenced to imprisonment.

There have been, on the other hand, cases which Federal judges decided not to bring to trial, apparently believing the laws against counterfeiting were not adequate. This led to an amendment making the manufacture, sale, or distribution of slugs for fraudulent use illegal. The amendment was approved by Congress on April 1, 1944, and became Public Law No. 278. The law is now incorporated in the revised Title 18 of the United States Code, Section 491, approved June 25, 1948, as Public Law 772. In this amendment there is a provision defining "knowledge or reason to believe" along the same lines as in the state laws of Minnesota and Ohio previously mentioned.

Public Law No. 772 should eliminate the manufacture of slugs as a business venture, although it may be that some will occasionally be made in the kitchens of a few people, just as counterfeit money is sometimes made. To combat the manufacture of slugs for fraudulent purposes should now be much easier because of the heavy penalties for violating the Federal counterfeiting laws.

The combined effect, from the standpoint of the Bell System, of all these coordinated activities—including the skill of the engineers in improving the coin telephone, the cooperation of legitimate manufacturers, and the assistance of State and Federal authorities—has progressively lessened the slug problem. The temptation to use slugs has been largely eliminated, and the relatively few who still try find it tougher going and with less and less likelihood of success. Bell System losses from slugs are now less than one-tenth of what they were in 1933.

This article must not be construed as reflecting on the American public generally. Its author still believes, despite the evidence here adduced, that most people are honest.—(*Reprinted from The Bell Telephone Magazine.*)

On the job records prove that the Neale Model D Pull-type Cable Spinner speeds new work, keeps line charges low.
Cut Maintenance Costs—
Speed New Construction

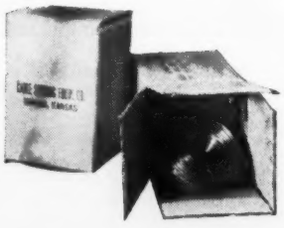
Cable spinning lengthens plant life . . . lowers maintenance costs ⅔ . . . speeds new construction, telephone companies from coast to coast report.

You, too, will find cable spinning fast, practical and economical when your crews are equipped with Cable Spinning Equipment Company tools designed specifically for the job. There's a complete line to choose from. Ask your jobber today.

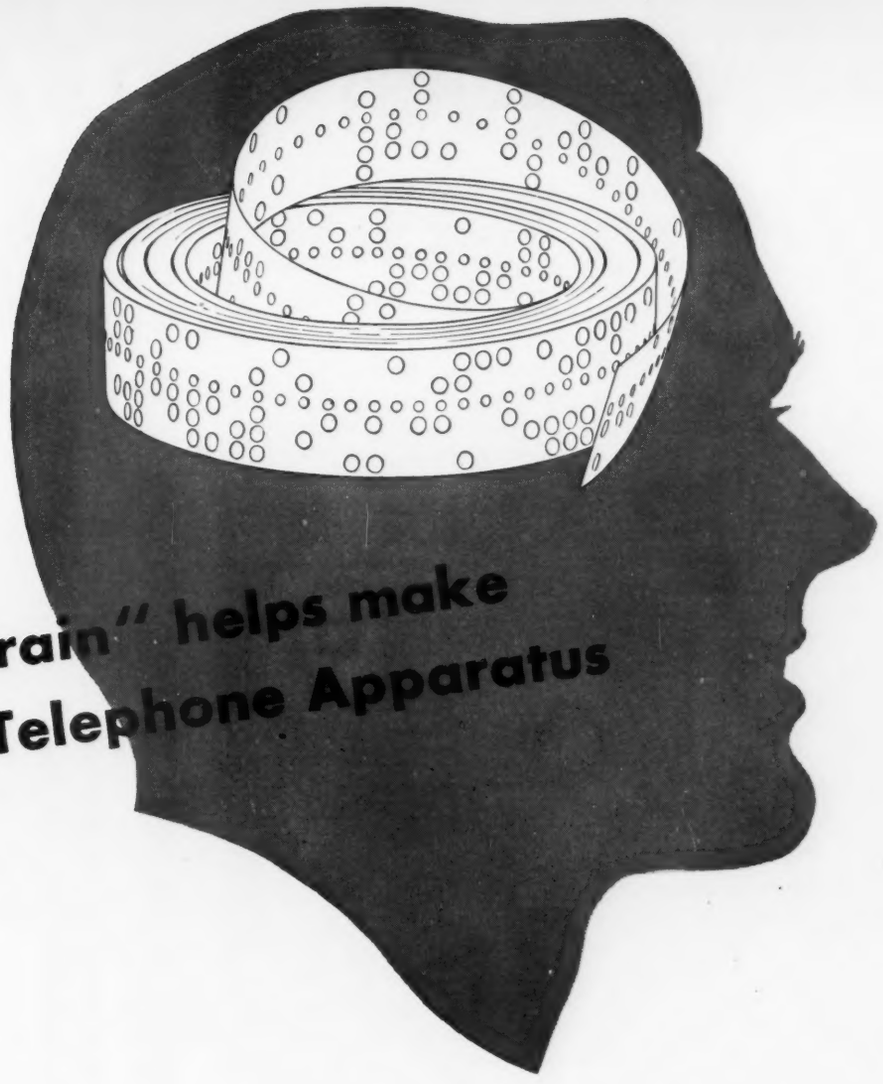
Neale Model B One Man Cable Spinner operates from ground or strand.

For BEST RESULTS Use NEALE Wire!

Available in 7 different types and sizes, famous Neale Spinning Wire meets the toughest construction and corrosion conditions.



CABLE SPINNING EQUIPMENT CO.
TOPEKA, KANSAS Phone 3-1829

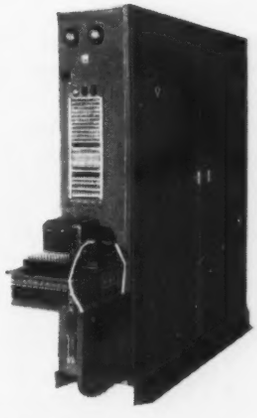


This "Brain" helps make better Telephone Apparatus

To improve the accuracy of testing switching equipment and to speed up tests during manufacture, Western Electric built and uses the Tape-O-Matic test set which has a paper tape "brain."

An operator connects the apparatus to be tested to the Tape-O-Matic with a multi-connector plug, inserts a pre-coded perforated tape and presses the "start" button. Then the machine takes over and automatically performs the complicated series of tests. If there is a fault in the equipment the Tape-O-Matic stops, rings a bell, and indicates the source of trouble on a lighted panel.

The Tape-O-Matic is another illustration of the care and thoroughness which Western Electric puts into the manufacture of its telephone equipment.



TAPE-O-MATIC test set, with perforated tape control, can automatically perform tests in proper sequence on as many as 1000 different types of wired telephone equipment.

Western Electric

TELEPHONE APPARATUS AND CABLE

QUESTIONS and ANSWERS

Edited By

Jay G. Mitchell

Question:—We have a rural line about twenty miles long with 22 subscribers on it, the first subscriber is twelve miles out. All subscriber sets are 1.600 ohm ringers with condensers in the receiver circuit. This line has been working grounded for many years with very few service complaints. Due to the R.E.A. interference we made the line metallic and we find we are unable to ring the end subscriber. However they have no trouble in ringing Central and the transmission is very good. The line has been thoroughly checked. Should we change ringers to, say, 2,500 ohms or is there some type of repeating coil that we can install either on the line or in the Centrall Office or both? We would appreciate your idea on this. Stamped and directed envelope is enclosed for your early reply.

Answer:—One remarkable thing about this inquiry is that with a metallic circuit twenty miles long and with the first subscriber twelve miles from the central office and *twenty two subscribers connected to the circuit* that the transmission is very good but the most distant subscriber cannot be called from the Central Office. The ringing trouble would probably disappear and the good transmission would be much better if this heavily loaded twenty mile circuit were divided and made into *two circuits* instead of one.

The inquiry does not state the type of SUBCYCLE and there are several different types of this excellent ringing current source that are on the market. If the SUBCYCLE in use in this case is model "B" it would be well to check the *input* voltage as this type provides an adjustment for abnormal input voltages from below 110 volts to over 120 volts. Be sure also that a good 25 watt lamp is connected into the ringing lead to each of the switchboard positions. This company may wish to consider the establishment of divided circuit ringing in which the ringing current passes over one line wire and the earth while the talking circuit is fully metallic. Please write in again if this does not clearly and fully cover your inquiry.

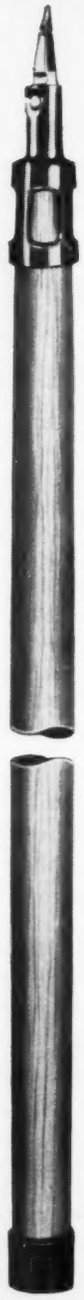
Question:—We have a Kellogg Common Battery Magneto Switchboard that is giving trouble with cross talk. It seems that it is in the cam keys as I have had the test set on route frame and could not hear any cross talk. Sometimes you can hear cross talk in operator's receiver with all keys closed, and again it is so bad that two adjacent plugs cannot be used at the same time. Board is number 4220. There has been a good bit of splicing on the wires to drops on this board. Any information that you can give will be appreciated. Stamped envelope inclosed for reply.

Answer:—This inquiry is not at all clear but as I read it this installation is giving common battery service from a magneto switchboard. This is assumed because the inquiry states that the switchboard is *Common Battery Magneto.* In case the lines to this switchboard are grounded circuits (one wire) I suggest that the common exchange ground be examined. The wire leading to the ground rod may have been broken or corroded or the ground surrounding the ground rod may have dried out more or less. In either case a high resistance ground connection (or an open connection to the ground) would, in case grounded circuits are in use, cause severe cross talk. In that case three new ground rods installed and connected together with heavy copper wire soldered to each ground rod and with a soldered lead to the main distributing frame ground.

If the wiring of the switchboard has been cut and spliced improperly it is possible that the insulation of some wires may have been impaired. In that case it is suggested that this company ask that THE KELLOGG SWITCHBOARD AND SUPPLY COMPANY rewire the switchboard as the cost, in view of the poor service being given, would not be too much to be justifiable.

Write in again and give me some more information as to the character of the equipment and the service being given the public and your subscribers. Otherwise it is impossible for me to answer your inquiry more fully than the above.

STROM



chance
pike poles
with reversible safety point

Recommended for raising tel ephone or power poles, and as ground braces in pole setting work. Made from Douglas or Western Fir, free from defects and lacquered. Reinforced steel collar at butt protects against splintering. Pike or ferrule available separately.

Safety point is reversible— may be inserted into ferrul to eliminate sharp projection Replaceable when worn.

Wire lift attachment, for ha dling telephone and low vo age secondary conductors.

STROMBERG

STROMBERG Telephone CARLSON

TELEPHONES, SWITCHBOARDS • SOU

MBERG-CARLSON recommends...

for accurate and rapid wire stringing or checking USE the dillon dynamometer

There's no guessing or uncertainty when a scientific Dynamometer is used to check wire tensions. *Easy* to use, *easy* to read, dead accurate. Works on new leads going up or *old* leads long established. Hundreds of satisfied owners in telephone and power fields. Reasonably priced. Decide *now* to save time and money with this useful tool. Prices on request.

crapo

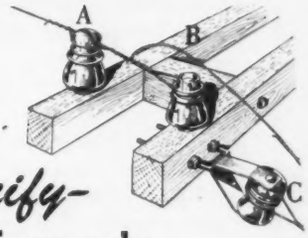
guy and messenger galvanized strand

The superior tensile properties inherent in steel are used to full advantage in *Crapo* Galvanized Strand. The tightly adherent zinc coating applied by the *Crapo* Galvanizing Process provides lasting protection against corrosion, and prolongs the life of the strand. Controlled ductility makes *Crapo* Strand easy to work and to serve. Low first cost and low yearly cost result in important economies for operating companies.

The all-round dependability of *Crapo* Galvanized Steel Strand is being demonstrated constantly by its outstanding performance in service. There is a size and grade for all practical needs.

LONG LIFE—LOW COST

for dead-ending spans of 300 to 400 feet



specify- hemingray's No. 110 insulator

This new insulator was designed to conform with specifications of the Association of American Railroads, for clevis-type dead-ends on spans of 300 to 400 feet. In the sketch above, "A" and "B" are Hemingray's No. 43 and 45, and "C" is the new 110.

The triple upper-skirt rings produce very low leakage. And leakage to lower clevis arm is reduced to a minimum by the exceptionally deep petticoat.

Packed: 40 to a carton, weighing 49½ lbs. A product of American Structural Products Company.

CARLSON

Factory, General Offices: Rochester 3, N.Y.
Branch Offices: Atlanta 3, Chicago 6, Kansas City 8, San Francisco 3. In Canada: Stromberg-Carlson Co. Ltd., Toronto

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PONY PINTYPE
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F. O. B. Factory

ORDER NOW

Finest Quality Electrical Porcelain, Brown Glaze, One Inch Threaded Pin Hole. 2-3/16" Diameter, 3-1/8" High. You'll Like Them. Satisfaction Guaranteed.

NO. 6109-D

and for Perfect
INSTALLATION SERVICE

Made to guarantee top quality in insulation and top performance on your telephone installations. A complete and diversified line with each item especially engineered and produced to exacting specifications for telephone service.

Sold through your jobber. Write direct if he does not carry the P.P. line.

SCREW EYES

C KNOBS

S KNOBS

T KNOBS

No. 6062

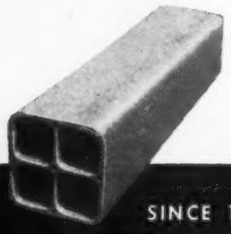
STRAINS

TREE KNOBS

No. 4-2 GR.

TUBES

PORCELAIN PRODUCTS, INC.
FINDLAY, OHIO



SINCE 1889

NATCO
CLAY CONDUIT

The proved and standard Protection for Underground Telephone Cables.

Cheapest in the long run. Highest quality and a full line of shapes.

National Fireproofing Corp.
202 E. OHIO STREET N. S.
PITTSBURGH, PA.

Rural Telephone Loans

(Continued from page 32)

other rural users, keeping and paying adequate rates for the service. Perhaps REA has made the discovery that the average telephone subscriber has not one penny invested in his telephone service (other than the usual $1, $2 or $3 installation charge), and that it would be to everybody's advantage if he did have some money tied up in it—like the REA power user has in his electric stove, milking machine, radio, house wiring, refrigerator, vacuum cleaner, etc. etc. But this is all pure conjecture, and is perhaps out of place—it is just that I wondered what that term "rates and charges" was intended to mean.

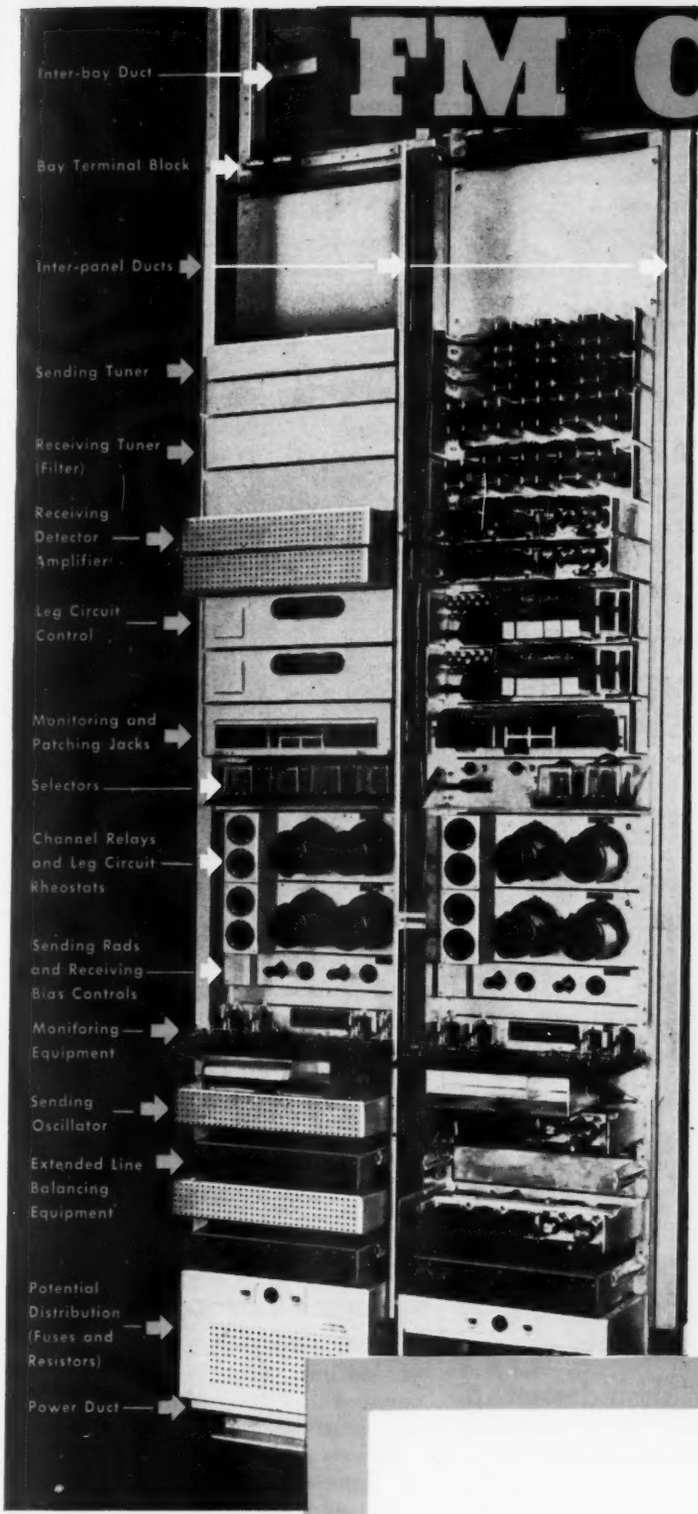
We now come to the question that has been worrying a lot of telephone people. "How much of the management is REA going to assume when it lends money to a company?" The answer, from the pamphlet, is that REA could assume as much or as little as it chooses. Here are some of the things, according to the pamphlet, that it *could* do. Fire the management personnell at any time. Change salaries at will. Refuse to allow the payment of any dividends (except preferred dividends which I assume would have to be allowed). Furnish service to any applicant required by REA. Raise, decrease, or reapportion rental rates (state commission approval forthcoming). Put all unused funds in reserves adequate for any purpose specified by REA. Require approval by REA of all purchase orders. Require approval by REA of each and every installation, the setting or moving of poles, etc. That is not the end of the list by a long shot, but it will serve. The pamphlet also says that borrowers must agree to "submit specified financial and operating reports periodically." If any of you have ever seen the reports that REA power co-ops are required to send in "periodically" (which will mean monthly or less in all probability), that one little sentence is enough to give you the shivers. Again, I remind you, that what I have said is that REA *could* do the above things. Just exactly what it will do will depend upon how much of it the administrator thinks he should do and upon how much expense money Congress appropriates for him to do it with.

There is another item in the pamphlet well worth discussing. One of the loan requirements will be "Normally, a first mortgage on the borrower's entire system." This answers another question that a lot of people have been asking. But at the same time, it puts a lot more emphasis on a still unanswered problem. Just exactly what is REA going to allow companies to do with the money it lends them? For with a first mortgage on the entire property, there will be no other source to tap for money with which to do non-rural work. Is REA going to put up the money to do such work? If it doesn't, then the rural loan will be useless, and worse—it will be crippling, at least to a growing company. The installation of town and non rural telephones is just as much required of a telephone company as the installation of rural phones. Proper cable in town is just as necessary as proper open wire routes in the country, if all users are to have adequate service. Proper and adequate central office facilities are just as mandatory for one service as for the other. In the light of such facts, the definition of rural territory in the law becomes either meaningless or an absolute bar to the accepting of an REA loan. This argument is set forth, of course, for the consideration of those companies which serve at least one town with at least 1500 population, for in the smaller places, this problem does not arise. This problem is not answered by the pamphlet, but, fortunately, the test does *hint* that REA recognizes and will handle this situation favorably.

Now then, where has all of this talk gotten us? Frankly, neighbor, it was not intended to "get" you anywhere. If there are any two little companies that have exactly the same situation, and where exactly the same advice would apply, I have not yet seen them—that is one of the toughest things that Mr. Wickard will have to recognize and face. Practices that apply in one town will not fit another: construction standards that are perfect for Nebraska are all wrong in Alabama; a rural telephone in north-east Alabama *may* cost upwards of twice what one in south-west Alabama will cost; and so on, through every practice of every company.

(Please turn to page 62)

FM CARRIER



TELEGRAPH EQUIPMENT FOR IMPROVED TRANSMISSION

SUPERIOR PERFORMANCE

Provides a 10 db advantage over AM carrier with respect to interference from such sources as cross-talk, power line induction, etc. Unbiased operation against wide variations of signal level.

INCREASED FACILITIES

Voice-frequency telegraph carrier coordinates with group modulators, designed for use with this equipment, to provide frequency translations of groups up to 31 KC.

GREATER FLEXIBILITY

Readily coordinated with a wide variety of DC leg facilities. Can be integrated with most types of telephone carrier systems. Jack arrangement makes switching between circuits quick, simple. Standard and high-speed channels.

LASTING DEPENDABILITY

Rugged construction assures uninterrupted, dependable service. Designed—and proven under exacting operating conditions — for long service with a minimum of maintenance.

EASY MAINTENANCE

All assemblies easily accessible for inspection, service and maintenance.

For Quality Equipment to Meet Your FM Carrier Requirements—Call On BUNNELL

J. H. BUNNELL & Co.

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DEPT. 12

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a key word in communications equipment ➡ Research, Engineering, Production and Testing facilities for equipment for: Wire Lines • Submarine Cables • Railroad Communication • Radio Airway Systems Municipal Signaling • Army and Navy Signaling • Carrier Current • Automatic Telegraph • Facsimile

since 1926...

PLUS revenue for You

Much extra revenue can be yours through the use of pay telephones in public and semi public locations.

DAN MAC LIKE-NEW PAY STATIONS ARE EFFICIENT AND LOW PRICED providing GREATER PROFIT.

Prices:

#14 J. Pay Station, as pictured complete with handset and built in coin signal transmitter....**$27.00** ea.

Magneto ringer box for use with #14J including Alnico generator, induction coil and ringer,
1600 ohm ..... **13.20** ea.
2500 ohm ..... **13.20** ea.

#14J Pay Station with dial ..... **34.00** ea.

#11 Pay Station with mounting plate for wall telephone ..... **13.00** ea.

Other types available too.

The NEW STEWART TEST SET

Quickly locates line trouble without opening the line or cutting a wire. Common battery or magneto lines are tested with equal ease.

Weighs only 12 lbs. and is equipped with shoulder strap. Detector coil is standard. Available from stock.

Price—**$58.00**

Stewart Detecto-Meters and Cable Testers also available from stock.—Send for bulletin

DANIEL H. McNULTY
President • Manager

TELEPHONE REPAIR & SUPPLY COMPANY

1760 Lunt Ave. • Chicago 26, Illinois

Applying for and accepting an REA loan is a management decision, and such decision, on any problem, should be based on as clear a grasp of all the factors involved as possible. This discussion has tried only to point out some of the factors, as they are now known. Small companies, generally, are in desperate need of adequate financing, and REA is presumably in a position to fill that need. But money alone is not the full answer—the terms and conditions under which that money is respectively loaned and borrowed will determine the success or failure of the program. Each small company manager must determine for himself whether or not he will apply for and accept an REA loan. Each small company manager must determine for himself, what the effect on his company will be if he *doesn't* apply for and doesn't *accept* an REA loan. Perhaps it will be a case of choosing the lesser of two evils—perhaps it will be a case of balancing the advantages and disadvantages of doing it against those of not doing it, or of doing something else. The one bit of advice that I feel does apply to all small compaanies is, that if you *think* you *might* want an REA loan, then apply for it as soon as possible. The application blanks are available from the Rural Electrification Administration, U. S. Department of Agriculture, Washington 25, D. C. Send in the preliminary application, and then when the brass tacks start turning up, go after and get in writing the definite answers to your questions. Good decisions can't be based on "if" and "maybe"; they must be based on "yes" and "no".

Line Material Co. Changes Corporate Status

The Line Material Co., a division of McGraw Electric Co., has announced that three of its subsidiaries have been dissolved as individual corporations and will now be known as divisions of the McGraw Co. The firms affected are: Line Material Sales Corp. of New York, Oneida, N. Y.; Line Material Co. of Pennsylvania, East Stroudsburg, Pa., and Southern Line Material Co., Birmingham, Alabama.

In spite of the change in corporate status, the three plants will operate much as before. They will continue to be tied in closely with the parent Line Material Co., Milwaukee, Wisc., which was merged with McGraw October 1, 1949. There will be no changes in personnel or nature of products.

29 Iowa Companies Plan Rural Co-op

One hundred and seven board members representing 29 rural telephone companies attended a recent meeting sponsored by the Winnebago Rural Electric Cooperative Association, Buffalo Center, Ia. Discussion was held relative to merits of better telephone service, and how 50 or 60 mutual telephone companies within Winnebago County could be organized into one co-operative.

The following companies were represented at the meeting:

Forest City—The Forest City Mutual Switchboard Company, Citizens Fund Mutual Telephone Company, Forest Short Line, Forest Township Mutual Telephone Company, Hollandale Mutual Telephone Company, Lakeside Mutual Telephone Company, Leland Mutual Telephone Company, Mountain Line Telephone Company, North Madison Telephone Company, Line No. 45.

Lake Mills, Ia.,—Center Telephone Company, Newton Telephone Company, Silver Lake-Bristol Telephone Company.

Joice, Ia.,—The Home Mutual Telephone Company, Joice Independent Telephone Company.

Scarville, Ia.,—The Scarville Farmer's Telephone Company.

Thompson, Ia.,—The Farmer's and Town Mutual Switchboard Company, East Side Telephone Company, Jensen Telephone Company, King-Linden Mutual Telephone Company, Varland Co-operative Telephone Association.

Buffalo Center, Ia.,—The Farmer's Co-operative Telephone Company.

Woden, Ia.,—The Grant Co-operative Telephone Company.

Kiester, Ia.,—Iowa Line Telephone Company, The North Eden Telephone Company.

Rake, Ia.,—The Joint Telephone Company of Rake, Beaver Telephone Company, Hessendahl Telephone Company.

The meeting was called to order by Winnebago REA chairman Elmer O. Bergland. REA manager Glenn Bergland led a discussion on the merits of a unified telephone system with modern automatic equipment. Winnebago REA Attorney Dudley Weible discussed the problems and ways a large telephone co-operative could be organized by the merger of existing telephone mutuals in Winnebago County and surrounding communities.

A questionnaire was passed around to the secretaries of the 29 companies represented, in which several questions were asked relative to organizing a modern telephone system. Some of the questions asked are as follows: Whether or not the existing company was incorporated. How many telephones are connected to the lines and also the number of non-users along the lines? Whether or not the telephone lines were metallicized and in good condition. What are the present dues and what would subscribers pay for good dial service?

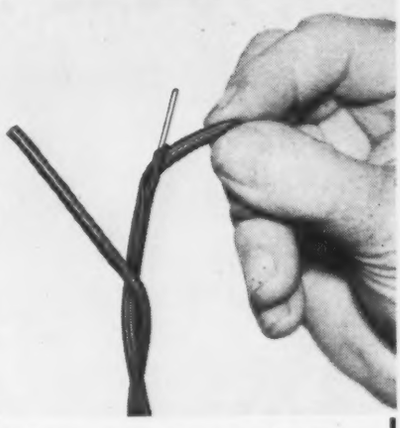
A motion was made and adopted that the mutual telephone companies either call meetings of their telephone companies or poll their members individually to obtain the concensus of opinion as to whether or not they wish to merge together into a larger telephone co-operative, by which means adequate service and maintenance personnel can be hired to maintain its lines.

Scarville Tel. Co. Plans Merger

Several stockholders were present at a special meeting of the Scarville Telephone Company, Kiester, Minn., recently.

After a discussion of the possibility of merging with other organizations in the area for improving telephone service, it was decided, without dis-

DEFINITELY SUPERIOR



Just One Look At Any PARAGON DROP WIRE

will convince you of its definite superiority—and there are four types to choose from. Whichever conductor you prefer may be had in either Paraprene or Rubber and Braid Insulation.

Paraprene Insulation is tough-weather proof—long life—due to the superior process of rubber treating and tough Paraprene coating.

Rubber & Braid Insulation same superior rubber—long staple cotton and mineral fiber braid—stearine pitch and mica finish (U.R.C. specification).

Paragon H.T. Bronze—18 B&S ga. An outstanding drop wire—strong and flexible—Tested to 90,300 PSI.

Paragon Calsun Bronze—18 B&S ga. Flexible—very strong. Tested to 134,500 PSI.

Paragon Copperweld—18 B&S ga. A conductor that has won its popularity thru its strength, workability and high conductivity. Tested tensile 133,000 PSI.

Paragon Ironite—18 or 19 B.W.G. ga. The old popular iron conductor—embodying strength, conductivity and economy.

All these are available in parallel or twisted pair.

Packed in 1000 ft. coils, each in heavy shipping carton. Shipments from Sycamore, Ill.

TELEPHONE DIVISION

PARAGON ELECTRIC CO.

Two Rivers Wisconsin

"What? Only 16 poles to the mile?"
Crapo HIGH TENSILE TELEPHONE LINE WIRE
COMPARE THE SPAN LENGTHS!
SIZE NO. 12 B.W.G. HEAVY LOADING DISTRICT
Crapo HTL-135
SPANS TO 350 FEET
Crapo HTL-85
SPANS TO 225 FEET
B.B. GRADE
SPANS TO 150 FEET
INDIANA STEEL & WIRE CO. MUNCIE, INDIANA

Crapo High-Tensile Line Wire Cuts Cost of Rural Lines

Spans to 350 feet are possible in Heavy Loading Districts where Crapo HTL-135 Telephone Line Wire is used. This means that, in straight runs over flat open terrain, the number of poles per mile can be reduced to 16.

Substantial economies both in construction and maintenance are the result. Initial building costs are lower because of marked savings in material and labor. Upkeep expense is reduced because there are fewer pole structures to maintain. Service interruptions are minimized because Crapo High-Tensile Line Wire offers increased resistance to ice and wind, provides a greater margin of safety.

Crapo High-Tensile Telephone Line Wire is available for prompt shipment from jobbers' warehouse stocks or from our mill.

FURNISHED IN TWO STRENGTHS

Crapo HTL-135 Telephone Line Wire has two-and-one-half times the strength of standard B.B. wire; makes possible spans of 350 feet in Heavy Loading to 500 feet in Light Loading districts. Crapo HTL-85 (No. 12 B.W.G.) has 60% greater strength than B.B. wire, provides for spans of 225 feet in Heavy Loading, 375 feet in Light Loading areas. Both have telephonic transmission qualities superior to B.B. wire.

WRITE FOR VALUABLE ENGINEERING MANUAL!

Be sure to get a copy of this helpful guide to long-span low-cost construction! Ask your distributor of Crapo Galvanized Wire and Strand or write direct for Manual No. 203!

INDIANA STEEL & WIRE COMPANY · MUNCIE, INDIANA

sent, that merger plans be approved. At a board session held after the general meeting. John Solomonson was appointed to represent the Scarville company in effecting the merger.

Formulate Plans For New Rural Co-op

Plans were formulated for a rural telephone cooperative at a recent meeting of interested parties from the rural areas of Delta, Marquette, Menominee and Alger counties, Mich., at the headquarters of the Alger-Delta Cooperative Electric Association, Gladstone, Mich.

Attending the meeting were Mr. and Mrs. Clark Haskins of Au-Train; John Ohlen of Route 1, Rapid River; A. P. Wilson of Au-Train; Peder Pederson of Stonington; Mrs. Peter Wery of Wilson; Mrs. John Nestle of Wilson; Howard Strahl of Wilson; Archie Potvin of Trenary; Edward J. Johnson of Perkins; Edwin P. Johnson of Rapid River, and Ignes DePas of Wilson.

Haskins, Ohlen, Pederson, Strahl and Potvin were named by the group to serve as incorporators of the new cooperative.

Attorney Clair Hoehn, of Gladstone, was engaged by the group to serve as counsel. Attorney Hoehn was instructed to draw up articles of incorporation, by-laws and membership application and as soon as ready a meeting of the incorporators will be held to consider the documents.

John Pokela, of Rock, was asked to serve as consultant on cooperative principles.

Iowa Company Study Merger Plan

The directors of Center Township (Ia.) Telephone Co. held a special meeting of subscribers at the city hall in Lake Mills, Ia., for the purpose of discussing the Rural Telephone Association plans as presented by officers of the Winnebago REA at a recent meeting in Thompson.

Texas Rural Area Seeks Telephones

Rural residents of Rusk County, Texas are signing applications for telephone service under the new federal Co-Op Plan, with J. T. Lock, Laneville, Tex. school superintendent, serving as chairman of the movement to establish a Co-Op exchange in the county.

American Coach & Body Advances F. C. Hall

The American Coach & Body Co., Cleveland, Ohio, manufacturers of utility truck bodies, has announced the appointment of Fred C. Hall as director of sales, succeeding Clarence G. Wood.

Mr. Hall has been a member of the American organization since 1936. He has concentrated on sales work and has represented the company in the western half of the United States. In 1946, he was chosen to open the company's new California division at Oakland. As general manager, he has been active executive officer of the division, until his recent recall to Cleveland as director of sales for the entire company.

FRED C. HALL

Hall has had an extensive background in the utility business. After serving as an engineer on the Sinclair Pipe Lines he joined the Lincoln Telephone & Telegraph Co., Lincoln, Neb. During his several years with Lincoln he moved up the ladder from ground man, lineman, repairman to supervisor of motor equipment. This experience has been valuable to the customers of The American Coach & Body Company which specializes in motor trucks for the power, light, gas, telephone, water and other elements of the utility industry.

He is a member of the Pacific Coast Electrical Association, and the Society of Automotive Engineers as well as several Power Associations.

S. Morrison Heads Morrison Steel Products

The election of Jacob Morrison to the chairmanship of the Board of Directors and of Samuel Morrison to the presidency of Morrison Steel Products, Inc., Buffalo, was announced, following the annual Board of Directors meeting recently.

Jacob Morrison, who founded Morrison Steel Products in 1912, has been its president since its incorporation in 1920. Samuel Morrison has been executive vice president for the past 10 years. Following his graduation from Syracuse University in 1929, he worked in every department of the factory and later entered the sales promotion division. Gradually assuming administrative and executive duties, he was given charge of all activities in the contract stamping division, a function which he still retains. For the past five years, Samuel Morrison has been a member of the Board of

(Please turn to page 68)

1 MAN CAN DO THE WORK OF A CREW...

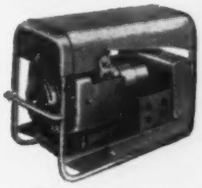
with an

Use Electric Tools on Every Job!

Speed the work, cut costs on installation and maintenance jobs. Lightweight Onan air-cooled electric plants supply electric power anywhere for lights, drills, saws, hammers, spades and other motor-driven tools. Equipped with carrying handles or dolly-mounted. Take 'em anywhere and plug in for all the power you need.

SHIPPED COMPLETE READY TO RUN

Gasoline powered models— A. C.: 350 to 35,000 watts. D. C.: 750 to 15,000 watts. *Diesel plants:* 2,500 to 55,000 watts.



Write for Folder

Model 5CK, 5,000 watts D. C. Weighs only 315 lbs.

D. W. ONAN & SONS INC.
5907 Royalston Avenue
Minneapolis 5, Minnesota

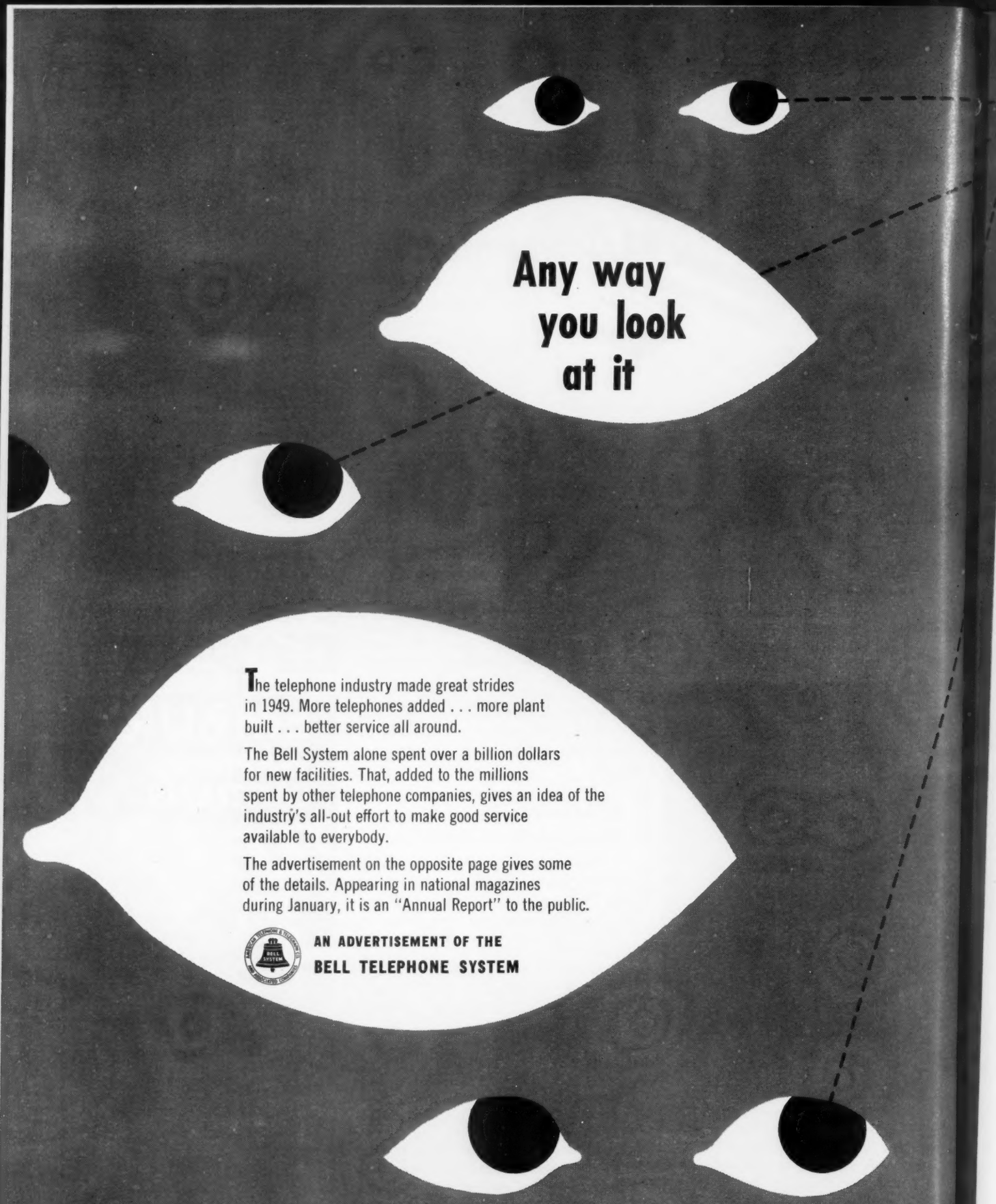
EMBURY WARNING LANTERNS

- Sturdy Compact Design for Long Hard Service.
- Automatic Standing Bail with "Locked-in" Bail Ears.
- Flame Windproofed by Balanced Air Control.
- Smooth Operating Lift Lever for Easy Lighting.
- Burns 30 Hours on a Filling.

Order from Your Distributor.

For more facts about AIR PILOT Lanterns, write,

EMBURY MANUFACTURING CO.
210 Allen Street Warsaw, N. Y.



The telephone industry made great strides in 1949. More telephones added . . . more plant built . . . better service all around.

The Bell System alone spent over a billion dollars for new facilities. That, added to the millions spent by other telephone companies, gives an idea of the industry's all-out effort to make good service available to everybody.

The advertisement on the opposite page gives some of the details. Appearing in national magazines during January, it is an "Annual Report" to the public.

AN ADVERTISEMENT OF THE
BELL TELEPHONE SYSTEM

1949 Was Another Good Year for Telephone Users

MORE SERVICE FOR MORE PEOPLE—Nearly 2,000,000 telephones were added to the Bell System in 1949. This meant service not only for many people who did not have a telephone before but it also increased the value and usefulness of your own particular telephone. You can call many more people—and many more can call you. There are now more than 50% more Bell telephones than at the end of the war.

BETTER LOCAL SERVICE—The over-all quality of telephone service continued to improve in 1949 and it keeps right on getting better. There's faster, clearer, more accurate service on millions of local calls.

IMPROVEMENTS IN LONG DISTANCE Long Distance grew steadily better in 1949. The average time to complete out-of-town calls is now down to little more than a minute and a half. Nine out of ten calls go through while you hold the line. Over many routes, the Long Distance operator dials the distant telephone direct. It's faster, friendly, courteous service all the way.

275,000 NEW RURAL TELEPHONES were added by the Bell System in 1949. 1,300,000 have been added since the war—a truly remarkable record of rural development by the Bell System. Great gains were made also in the quality of service. Fewer parties on the line. Many thousands of new-type telephones put in. A higher proportion of our farmers have telephones than in any other country in the world.

CONTRIBUTION TO PROSPERITY—All of this expansion and improvement in telephone service provided work and wages for many people outside the telephone business.

More than $1,000,000,000 was put into new facilities. Western Electric—the manufacturing unit of the Bell System—bought from 23,000 different concerns in 2500 cities and towns throughout the country.

BELL TELEPHONE SYSTEM—The best and the most telephone service at the lowest possible price.

'50 P&H PENTA

PENTA POLES

FULL LENGTH TREATED *NORTHERN* WHITE CEDAR

P & H Treatment insures against Sapwood deterioration and termites.

Uniform results of Penta treatment assured by laboratory control.

PAGE AND HILL, INC.

MINNEAPOLIS, MINN. • 50 CHURCH ST., NEW YORK, N. Y.

DISTRIBUTED BY AUTOMATIC ELECTRIC SALES CORPORATION • • • • STROMBERG-CARLSON COMPANY

SAVE TIME • CUT COSTS • INCREASE SAFETY

With COFFING MAINTENANCE TOOLS

FLAG and FLAG HOLDER
Holder fits all poles. Main casting of malleable iron. Chain wraps around pole, hooks into main body of clamp; strong coil spring assures tension.

TEMPORARY GUY CLASP
Built on vise principle, with vise screw enclosed. Powerful grip, easy to handle. Automatic grip permits necking close to pole.

SAFETY-PULL RATCHET HOISTS
For heavier jobs. ¾-ton model weighs but 14 lbs. — 8 other models, handling up to 15 tons.

LIFTING GINS
Model OST (shown) is of malleable iron and steel construction for top of pole.

Also available: Model ST—malleable iron and steel construction for side of pole. Model WT—wood and malleable iron, a non-conductor, for pole top.

POWER PIKE POLE
Built of two telescoping galvanized pipes. Power obtained from Coffing Load Binder or Safety-Pull Hoist. For straightening leaning poles. Minimum height 8′ 2″; maximum 11′ 7″.

MIGHTY MIDGET PULLER
Weighs only 6½ lbs. — lifts or pulls 500 lbs. Handle operates as lever or high-speed crank.

COFFING TEMPORARY CROSS ARMS

—Light Weight, Built for Hard Use

Model 10-B (above) has last four hooks on each end on a swinging arm that may be locked open or closed; permits handling both straight and phantom circuits.

Also available: Model 10-A for electric work. Hooks self-locking, of certified malleable iron. Model 10-C for changing cross arms on corners.

For more information on these tools or Coffing lifting and pulling equipment for any purpose, write Dept. U1.

COFFING HOIST COMPANY
DANVILLE, ILLINOIS

Directors of the Pressed Metal Institute of America, Chairman of the New York State District, and a member of its National Executive Committee. He is a member of the Westwood Country Club, Montefiore Club, and Masons. He is married and has one son.

Other organizational changes announced were the appointment of Norman H. Siegel as chief engineer and of Roy C. Timm as director of quality control.

Lexington, Ky. Completes Automatic Conversion

America's Independent telephone industry saw the completion of a $4,000,000 construction and improvement project on December 11, when the Lexington (Ky.) Telephone Co., a subsidiary of the General Telephone Corp., converted its 24,000-station network in Lexington, Ky., from manual to dial operation.

The full-sweep change-over, which took place in the company's new four-story central office building, placed in operation automatic switching equipment with a capacity of 15,400 lines and 22,400 terminals. It made Lexington the third leading city in the United States and the second subsidiary of General Telephone Corp. to install the 7A-2 Rotary-Dial system manufactured by Federal Telephone & Telegraph Corp., associate of International Telephone & Telegraph Corp. The 16,000-station net-

S. W. ROLPH, executive vice-president, The Electric Storage Battery Co., Philadelphia, has been elected president, effective January 1, 1950 to succeed R. C. Norberg, who has been elected chairman, board of directors.

work of the Elkhart, Indiana, GTC subsidiary was converted from manual to Rotary on October 7, 1949. The first major cut-over of Rotary in this country was in August, 1948, by the Rochester (N. Y.) Telephone Corp.

Lexington's new dial installation operates with any other dial telephone network in the United States and can be readily expanded. A product of cooperation between engineers of Lexington Telephone Co. and Federal, the system was especially designed to meet the city's particular operating requirements, including provision for swift, unerring connection in the dial central office and reliable handling of Lexington's traffic load. As the assignment of ringing frequencies is completely flexible and independent, any four or eight telephone numbers may be grouped together on a single line.

The Rotary system installed at Lexington is a power-driven system that utilizes finder, selector and sequence switches and flat type relays, which are grouped in various combinations and mounted in bays. The bays are installed on switchracks and arranged in 2,000-line groups.

The Lexington installation includes a 42-position toll board, a 4-position route and rate desk, a 10-position special service desk (for information, intercept, etc.), a 4-position combined local and toll service observation board, a 6-position combined local and toll test board, and a 2-position repair service desk. Dial service assistance calls are handled on the toll board. For rapid handling of toll tickets, the latest design pneumatic tube-ticket-distributing system is provided between the toll board and the route and rate desk.

The Lexington installation is housed in an entirely new central office building at Barr and Walnut Streets. Modern and distinctive in design, general layout and furnishings, air-conditioned, and equipped with the latest in air-cleaning facilities, it is one of the most efficiently planned structures of its size and type in the industry today. On the ground floor are located the office of the general manager, the commercial offices, the stenographic sections, the main and intermediate distributing frames and the test board. The second floor contains the automatic switching and power equipment. Plant and engineering offices are on the third floor, which also is used by the Southern Bell Telephone & Telegraph Co. for its toll, repeater, phantom and carrier terminating equipment and test boards—with space reserved for national toll dial-

ALPHADUCT WIRES

FOR *All* TELEPHONE REQUIREMENTS

LONG LIFE

Neoprene Jacketed
Drop and Bridle Wire

Weatherproof Braided Drop and Bridle
Interior - Tree - Ground - Switchboard -
Pothead - Cable Terminal - Instrument

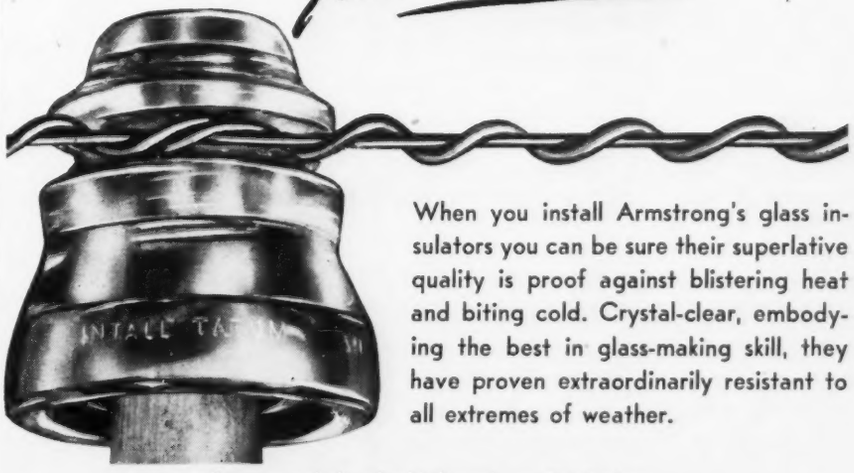
Manufactured and Tested to Rigid Specifications

ALPHADUCT WIRE & CABLE CO.

Milltown, New Jersey Telephone: Milltown 8-0030

Reduce breakage loss with . . .

Armstrong's glass insulators



When you install Armstrong's glass insulators you can be sure their superlative quality is proof against blistering heat and biting cold. Crystal-clear, embodying the best in glass-making skill, they have proven extraordinarily resistant to all extremes of weather.

Recommended and sold through our distributors

AUTOMATIC ELECTRIC

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

THE WHITNEY BLAKE BULLETIN

DROP WIRE ECONOMICS

THE ECONOMY OF HIGH QUALITY

The initial cost of drop wire is insignificant. Labor, overhead and miscellany can account for as much as 80% of the total installed cost. Thus, when so-called "low-cost" drop wire *fails,* its true cost becomes apparent — to the dismay of shortsighted drop wire economists.

Ordinary drop wire fails due to deterioration of insulation, or a lack of adhesion to the conductor. In TELEPRENE drop wire a special neoprene-compounded jacket, plus Whitney Blake's exclusive Teleplate process, provides the telephone operating company with *true* drop wire economy — a drop wire that resists weather so steadfastly and adheres so tenaciously that predictions as to its life-expectancy are nigh impossible. *Not a single case of TELEPRENE failure has been reported to date.*

The story of the research and effort behind TELEPRENE is an engrossing one. But most interesting to telephone people is the story of TELEPRENE's *performance, its economy* . . . For full information, write Whitney Blake *today.*

THE DIFFERENCE IN COST IS PENNIES

THE DIFFERENCE IN LIFE IS YEARS

Reprints of this advertisement are available on request.

WHITNEY BLAKE CO., NEW HAVEN, CONN.

ing. On the fourth floor are the traffic department offices, the Lexington toll board and rest room facilities for the operators. More than a million connections were soldered in the new building, which has 47,500,000 feet of wire in the various equipment units.

Amer. Crossarm & Conduit Sold To Stoker & Masterson

Announcement has been made of the sale of the American Crossarm & Conduit Co., Chicago, Ill., to Nelson D. Stoker and Fred A. Masterson.

Mr. Stoker is well known in the telephone industry. Following graduation as a civil engineer from Washington University, St. Louis, Mo., in 1929, he went to work with the

NELSON D. STOKER

Southwestern Bell Telephone Co., and remained with that company for 10 years. The next three years were spent in the sales department of James R. Kearney Corp. Following four years service as a Major in the Ordinance Department of the U. S. Army. Mr. Nelson joined the American Crossarm & Conduit Co., as secretary.

Mr. Masterson, a native of Sebetha, Kansas, graduated in 1926 from the University of Nebraska. Following graduation he joined the Burlington & Southern Railroad. In 1928, Mr. Masterson joined the American Crossarm & Conduit Co. as traffic manager, and was later made vice-president of the organization.

A. H. (Andy) Voram, retired as president of American Crossarm &

(*Please turn to page* 76)

WE MADE A SENSATIONAL PURCHASE!

NOW YOU CAN SAVE TREMENDOUSLY

● BRAND NEW

U. S. SIGNAL CORPS
TWISTED PAIRS

FIELD TELEPHONE WIRE

1B110B—2, INSULATED,
2 CONDUCTOR,
SEVEN STRAND (3 Copper - 4 Steel)
Manufactured by Anaconda & General, etc.

● YOUR COST $10.00 PER MILE REEL

F.O.B. OGDEN, UTAH

GOVERNMENT ACQUISITION COST PER MILE REEL $86.80 PER MILE

WEIGHT PER REEL, 164 LBS., CUBE 3.8 FEET

MINIMUM ORDERS ACCEPTABLE, 5 REELS

If you are a rated firm, we shall be pleased to extend to you our regular terms: Net 10 E.O.M.; if not, please send check with your purchase order.

"If each INDEPENDENT TELEPHONE CO. was to buy just one mile of our FIELD TELEPHONE WIRE, we wouldn't have enough to go around. The first customer we called ORDERED A CARLOAD OF FIELD TELEPHONE WIRE."

ALL TRANSACTIONS GUARANTEED

DO NOT DELAY **ACT NOW!** **ORDER TODAY**

Sugarman Equipment Co.

420 EAST 8th STREET • LOS ANGELES, CALIFORNIA

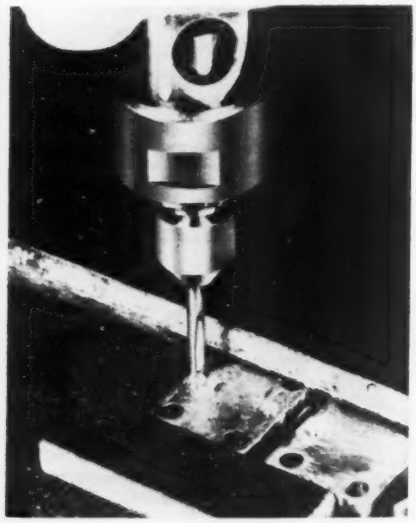
CALL, WRITE OR WIRE MR. BEN BAIL OR ARNOLD BAIL

TUcker 3131

ADDITIONAL Information on New Products or Service and Supplies of any Advertiser listed in this section may be promptly obtained by filling out the handy request for more information reproduced on the opposite page. All items are numbered. Check number of items on which more information is desired and send to Telephone Engineer Publications. Kindly mention Telephone Engineer Publications when contacting advertiser direct.

the New Products Showcase

New Products & Supplies of Practical Interest



The manufacturer claims increased tap life and more precise threads are obtained by a new line of small taps. Available in standard or special sizes up to No. 2 (.086 inches) and having up to 260 threads per inch, these taps are low in cost, high in production. Between 2500 and 4000 threading operations per tap are reported from a number of users. The cut thread and flutes are highly polished to reduce drag and fatigue. Cutting edges have great strength due to the radial chamber and extra chip clearance is provided by the radial flute. In addition, special heat-treating methods have been developed which, applied to carbon steel, produce an extremely hard cutting edge and increased toughness throughout the length of the tap.—Check New Product 211.

ADVERTISING, Directories—General Telephone Directory Co., 604 Pine Ave., Long Beach, Cal., and 185 N. Wabash, Chicago, Ill.—[ADV. 4]

ANCHORS, Plastic Expanding, Universal All Purpose—Mount in any Material, Holub Industries, Inc., 424 DeKalb Ave., Sycamore, Ill.—[ADV. 5]

ANCHORS & WIRE CONNECTORS—Matthews Scrulix Anchors, Matthews Telephone Wire Connectors. Write for bulletins. W. N. Matthews Corp., St. Louis 16, Mo.—[ADV. 6]

BATTERIES, Dry Cell—The Ray-O-Vac Company, 2317 Winnebago St., Madison, Wisc.—[ADV. 7]

BATTERY—WATER UNITS Demineralizers For Tap Water—A. E. Tomkin & Co., 1828 Columbia Rd., N.W., Washington 9, D. C.—[ADV. 8]

BELTS — CLIMBERS — COMPLETE LINEMENS' EQUIPMENT, W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.—[ADV. 9]

BOOTHS—Acoustic Telephone—Sherron Metallic Corp., 1201 Flushing Ave., Brooklyn 6, N. Y.—[ADV. 10]

BOOTHS—Churchill Cabinet Co., 2119 Churchill St., Chicago 47, Ill.—[ADV. 11]

BRUSHES—Resistance Materials—Powder Metallurgy Parts—Keystone Carbon Co., Inc., Saint Marys, Penna.—[ADV. 12]

CABLE, All Plastic, Aerial, Duct, Direct Burial, PBX, Switchboard.—The Ansonia Electrical Co., Ansonia, Conn.—[ADV. 13]

CABLE SPINNING—The Cable Spinning Equipment Company, 432 Crane St., Topeka, Kans.—[ADV. 14]

CABLE TERMINALS—Channel Splicing Machine 2415 Roanoke Rd., San Marino, Calif.—[ADV. 15]

CARRIER EQUIPMENT—Adler Telephone & Telegraph Carrier Equipment has been standard for twenty years in the Independent Field. Mfd. only by Southern Electric & Transmission Co., 3127 Holmes St., Dallas, Texas.—[ADV. 16]

CLAY CONDUIT, UNDERGROUND—Furnished in 1-2-3-4-5-6-8 and 9 duct conduit in 3¼" bore. Brazil Hollow Brick & Tile Co., Inc., Brazil, Indiana.—[ADV. 17]

CONNECTORS, CABLE—Cannon Electric Development Co., 3209 Humboldt St., Los Angeles 31, Calif.—[ADV. 18]

CORDS, Instrument and Operators—Commercial Cord & Supply Co., 26 Main St., Clifton Springs, N. Y.—[ADV. 19]

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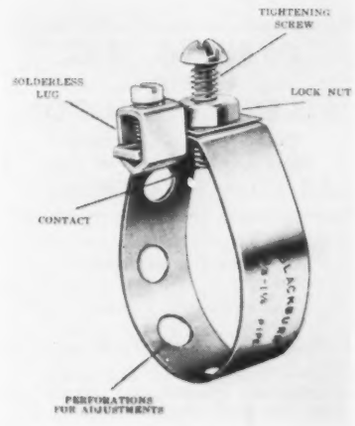

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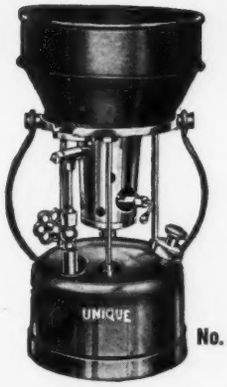

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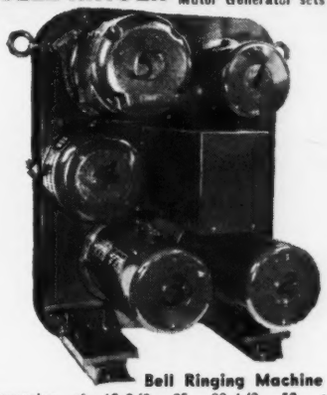

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A. H. (ANDY) VORAM

Conduit Company, January 1, 1950. Mr. Voram will confine his duties to his position as officer and director of the Whitney-Blake Company, manufacturers of wires at New Haven, Connecticut.

Graybar Announces Organization Changes

The Graybar Electric Company has reorganized its sales department to place stronger individual emphasis on its growing lines of appliance, radio and communications equipment, G. F. Hessler, vice president, announced recently. The move was made in recognition of the need for separating the appliance line from the constantly expanding radio and communications equipment line in order that Graybar may fully realize its sales potential in both fields, according to the announcement.

R. C. Litchfield, general appliance sales manager, retains his present title but will now report directly to Mr. Hessler, the announcement stated. Reporting to Mr. Litchfield will be G. T. Bryant, manager, major appliance sales; and J. R. West, manager, electrical housewares sales. Mr. West was formerly specialty appliance sales manager.

Communications sales which heretofore were a responsibility of the company's appliance department has been established as a separate department with responsibility for telephone, radio and sound equipment sales, the announcement disclosed. J. W. LaMarque, former manager of radio sales, will head up the new department as general communications sales manager.

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Division Chisholm-Ryder Co., Inc.
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Printing

for Telephone Companies
AS YOU WANT IT

From Suttle—You can get stock forms to help handle plant reports and office accounting efficiently.

From Suttle—You can get billing forms, envelopes, letter heads or any other material printed to your special order.

For years we have specialized in printing for telephone companies and we understand your requirements.

An inquiry about your needs will be given careful attention.

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SUTTLE EQUIPMENT CO.
LAWRENCEVILLE, ILLINOIS

DEPEND ON
SUTTLE

The torchlight telegraph of Polybius

IT TOOK a "communications expert" plus two nimble operators to spell out a message on this unusual semaphore, used by the Greeks around 200 B.C.

Brainchild of an historian named Polybius, this system was limited to short distances. Nevertheless, it represented one of the first types of coded communication.

Nowadays, messages streak over distances unimaginable to the ancients. On guard over many telephone and telegraph lines are Hemingray Insulators, contributing greatly to overall efficiency.

Hemingray No. 56

★

This advertisement is one of the Hemingray series on the history of communication.

HEMINGRAY INSULATORS

American Structural Products Company
MUNCIE, INDIANA
Subsidiary of **Owens-Illinois Glass Company**

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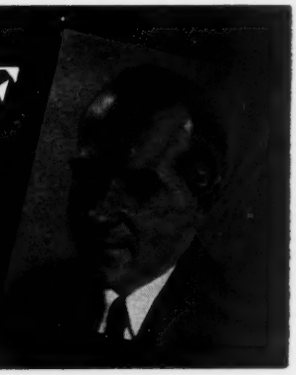


By JOHN G. REYNOLDS
Managing Editor

Ant or Grasshopper Security . . . One of the greatest lessons on individual security was taught long ago by Aesop in his well known fable of the ant and the grasshopper. Most of us recall how the grasshopper spent the summertime, dancing and playing . . . giving no thought to his future needs. The ant, on the other hand, provided for the future by storing up provisions for the winter. When the cold weather came, the ant was naturally well provided for, while the grasshopper went begging.

A lot of Americans must recognize the wisdom of that ancient fable because many of them are planning and working out their own pattern of individual security. At the end of 1948, for example, over $28 billion dollars were invested in various types of insurance policies.

Our American system of free enterprise was founded on the principle that individuals and businesses should bear the responsibility of providing for themselves without depending on outside agencies. However, there is a "grasshopper" school of thought today, which holds that profit serves no useful purpose . . . that in some miraculous way business can function without profit and that the future will somehow take care of itself. This is reckoning without one important fact. Under the profit system Americans enjoy a high standard of living that is the envy of people in every other part of the world. Profits, reinvested in the expansion and improvement of our industrial facilities, have helped make this possible.

• • •

What Does 1950 Look Like? . . . As is usual at this season of the year, the effort to forecast the general tone of business for the new year is occupying a good deal of time. The consensus seems to be that 1950 ought to be a good year—as good as this year, or perhaps a little better. But it will take more than a carefully opened transom to cash in on it.

Whatever the outlook for your particular business or your line of business, it is quite obvious that business will come, next year and in following years, to those who go out after it. Backing and filling, hemming and hawing, waiting and proceeding with excessive caution, won't put any orders on the books.

If you want 'em to buy, you'd better get out and sell 'em.

• • •

Political Monopolies Reach Out . . . John C. Doerfer, chairman of the Public Service Commission of Wisconsin, has warned that the Federal government is trying to extend its regulatory control over intrastate, as well as interstate, matters. He cited a case where the Federal Power Commission claimed jurisdiction over a utility company which had no property or any activity outside of the state. Then he said: "Once it gets its foot into the door, control by the state . . . will be so emasculated that its effectiveness will be nil . . ."

This trend is undoubtedly an offshoot of the drive to socialize the utility industry. State regulation has a splendid record. The state commissions know local needs, problems and desires. They can deal with each problem on its merits and close to fair decisions.

If their authority is destroyed by Federal bureau monopolies, the states will be set back another step toward becoming political nonentities.

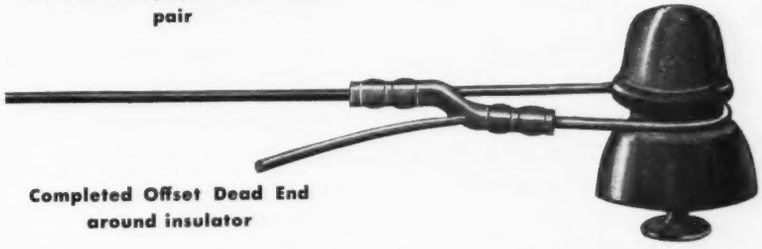
"JOB PROVEN"

By Linemen The Country Over

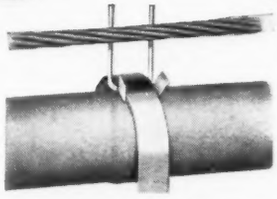
NICOPRESS Tool for Compressing Sleeves

NICOPRESS line wire Splicing Sleeve

NICOPRESS splices on twisted pair

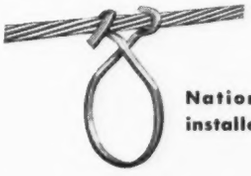


Completed Offset Dead End around insulator

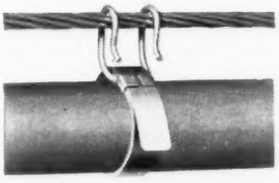


National Adjust-A-Strap, partially installed. Notice split buckle to facilitate wrapping zinc strap around cable

NICOPRESS Reducing Sleeve splice on wires of different sizes (before compressing)

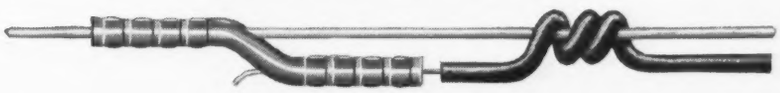


National cable ring installed on messenger



National Zinc-Wrap partially installed

NICOPRESS Repair Sleeve used to replace defective old style joints



NICOTAP—Split feature permits easy installation on line wire.

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The National Telephone Supply Company

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Export Distributor — INTERNATIONAL STANDARD ELECTRIC CORP., NEW YORK, N. Y.

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Why?

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Because no routine maintenance is required on these trouble-free boards.

Because years of accumulated know-how have gone into the manufacture of this equipment.

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